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ABSTRACT

The demonstration project assessed an innovative approach to the provision of remunerative work for evaluation, training, and employment purposes in sheltered workshops for 291 blind individuals who also were limited by vocationally significant intellectual, physical, emotional, and/or social disabilities. The multiply handicapped subgroup of the blind population, constituting a growing proportion of the workshop caseload, was seen to require work tasks that have special attributes that are in keeping with their multiple limitations. The project demonstrated that specially designed screening, product development, engineering, and rehabilitation techniques help the multiply handicapped blind to put out salable products. The outstanding conclusion was that, assisted by product development and related activities, workshops are able to serve growing proportions of multi-handicapped blind persons with unprecedented effectiveness. As a result of the demonstration, National Industries for the Blind (NIB) incorporated the experimental procedures into its ongoing service to NIB-associated workshops and is planning to extend the procedures beyond the government-purchase area into the private industry sector. (Author)

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CAN WORK

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MULTI-HANDICAPPED BLIND PERSONS CAN WORK

Report of a Research and Demonstration Project Exploring the Values and Limitations of a New Products Approach to the Rehabilitation and Employment Problems of Multi-Handicapped Blind Persons

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Herbert Rusalem and Harold Richterman

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June 30, 1972

RESEARCH BRIEF

MULTI-HANDICAPPED BLIND PERSONS CAN WORK

Herbert Rusalem and Harold Richterman

National Industries for the Blind

SRS Project 14-P-55047/2-03

The Problem

Sheltered workshops for the blind are being called upon to serve increasing numbers of multi-handicapped blind persons. The usual job tasks in such workshops are incompatible with the capacities of such clients owing to their complexity, irregularity, and skill demands. The lack of congruence between the capacities of multi-handicapped blind workers and the usual workshop job demands has resulted in the exclusion of many of these clients from the benefits of workshop rehabilitation and employment programs.

This problem has been sharpened by the passage of the Javits Amendment to the Wagner-O'Day Act which gives workshops for the blind and other workshops access to government-purchase products and services that had previously been unavailable to them. However, such products and services generally fall outside the ability parameters of multi-handicapped blind persons. In order to make this amendment (as well as the Wagner-O'Day Act itself) more useful to severely limited blind persons, National Industries for the Blind felt that a new approach was necessary to select, modify, and implement remunerative work tasks so that they would fall within the competency parameters of a multi-handicapped blind work force.

Although a number of approaches to the problem appeared to hold promise, National Industries for the Blind drew upon its extensive government-purchase experience and focused its resources upon devising improved procedures for identifying suitable government-purchase products, evaluating such products for their usefulness for multi-handicapped blind persons, engineering these jobs so that local workshops could make them accessible to seriously limited blind clients, and providing rehabilitation consultation to workshops in order to facilitate the preparation of multi-handicapped blind persons for the selected job operations. It was hypothesized that

these innovative procedures would expand the rehabilitation and employment opportunities available to multi-handicapped blind persons to a significant degree.

The innovative procedures adopted by the Project included:

1. The formation of a Government Products Committee to screen, evaluate, and select suitable products.

2. The involvement of individual cooperating workshops in field testing procedures.

3. The use of a products laboratory associated with NIB to devise improved production methods.

4. The application of engineering skills to analyze jobs and make them more functional for low-skilled multi-handicapped blind persons.

5. The extended use of rehabilitation procedures to assist in the training of multi-handicapped blind persons to do the jobs and to adapt successfully to the workshop millieu.

Implications for Action

1. Workshops for the blind and other disabled persons should develop systematic product search and screening procedures which scientifically and planfully identify products and services purchased by government which are suitable for multi-handicapped blind and other severely limited persons. Such procedures could well follow the NIB Project model, using criteria established in this Project to develop items that are compatible with the limited skills of severely disabled persons.

2. Suitable products and services can be developed which fall within the range of abilities found in a multi-handicapped blind population. Product development can be accomplished by introducing high-level engineering skills into the new product evaluation process as early as possible. Engineering breaks jobs down, develops or modifies sophisticated machines to assist multi-handicapped workers to do the job, and develops plant layout and work processes which enable severely disabled clients to maximize their abilities and productivity.

3. In place of heavy reliance upon unaided manual operations for multi-handicapped blind workers, workshops should turn increasingly to increased automation to help the severely limited workshop client to do an effective job. Workshops should be willing to follow engineering recommendations regarding the use of complex machines and

should gain access to the capital required to acquire the needed equipment.

4. New product development and engineering services provide an enormous impetus to the evolution of improved vocational rehabilitation and employment opportunities for multi-handicapped blind persons but, unless they are supported by concurrent rehabilitation and consultation services, they may not fulfill their potential. As a consequence, programs that seek to introduce new and more feasible work operations for multi-handicapped blind persons should be accompanied by viable rehabilitation programs which help to prepare workers to meet the new job demands.

5. The future of sheltered workshops lies in their being able to keep pace with advancing technology and new industrial management techniques. A continuing new product development service is one vital means for keeping workshops up with the times and enhancing their programs for multi-handicapped clients.

Supporting Findings

In the course of this Project,

... 37 new major government-purchase product lines were developed.

... Each of these new products proved adaptable and useful in relation to multi-handicapped blind workshop clients, generating millions of dollars in additional sales and wages.

... At least 291 multi-handicapped blind clients in more than 20 workshops for the blind achieved an employed status as a result of Project activities.

... A large majority of these individuals had their cases closed as "rehabilitated" by their state vocational rehabilitation agencies in conjunction with Project participation.

... Many of these clients continued to function in the workshops subsequent to the termination of the funded demonstration.

... Most of these participating workshops planned to retain these clients indefinitely in their work force.

... The new products development process was judged to be so successful that it was retained as an ongoing service by NIB and the associated workshops.

... In view of its successful experience in the Project, NIB is planning to extend the Project concept to the private industry sector.

... At Project termination, the participating workshops and the supporting state rehabilitation agencies rated the Project as highly successful in fulfilling its objective of expanding employment opportunities for multi-handicapped blind persons.

... Case materials suggest that substantial improvements in personal effectiveness, income, and orientation to work occurred among the multi-handicapped blind persons participating in the Project.

SIGNIFICANT FINDINGS FOR REHABILITATION (AND SOCIAL SERVICE) WORKERS

As a result of the New Product Development, Engineering, and Rehabilitation procedures evolved by this Project,

... more than 291 blind persons with complicating physical, intellectual, emotional, and social disabilities obtained stable and suitable workshop employment. In at least twenty instances, clients were enabled to move out of the workshop into employment in competitive industry.

... a total of 37 new government-purchase product lines were introduced into NIB-associated workshops for the blind in such classifications as plastic, metal, wood, paper, and disposable products. Examples of these new products were bags, tableware, curtains, dispensers, holders, plumbing fixtures, clubs and axe handles, bulletin boards, cups, masks, pillowcases, markers, pens and pencils, flashlights, first aid kits, and inking pads.

... Each of these new product lines has the requisite attributes of work tasks suitable for multi-handicapped blind persons: (a) long-term stability with minimum requirements for periodic client re-training, (b) job simplication leading to the evolution of repetitive work tasks that are within the skill levels of seriously limited blind persons and modest levels of perceptual and manual performance after suitable re-design.

... The development of new government-purchase product lines did not automatically result in augmented workshop rehabilitation and employment opportunities for multi-handicapped blind persons. Project objectives were achieved only when new products development procedures were combined with the engineering services and rehabilitation consultation which were delivered under Project auspices to the participating workshops for the blind.

... The clients who participated in Project activities achieved greater economic and social independence, many of them relying less fully upon public assistance and more upon their own efforts. For their part, the participating workshops learned that with the aid

of new products development and engineering, and rehabilitation services, they could serve increasing numbers of multi-handicapped blind persons more effectively than in the past.

The long-term outcome of the Project was the incorporation of the new products, engineering, and rehabilitation procedures pioneered by NIB into the ongoing NIB program and the probability that these procedures will be applied to workshop activities in the private industry sector.

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ABSTRACT

MULTI-HANDICAPPED BLIND PERSONS CAN WORK

Report of a Research and Demonstration Project Exploring the Values and Limitations of a New Products Approach to the Rehabilitation and Employment Problems of Multi-Handicapped Blind Persons

SRS Project No. 14-P-55047/2-03

Sponsored by National Industries for the Blind, 50 West 44th Street, New York, New York 10036

This demonstration assessed an innovative approach to the provision of remunerative work for evaluation, training, and employment purposes in sheltered workshops for the blind for individuals who, in addition to their blindness, are limited by concomitant vocationally significant intellectual, physical, emotional, and/or social disabilities. This subgroup of the blind population, constituting a growing proportion of the workshop caseload, requires work tasks that have special attributes that are in keeping with their multiple limitations. National Industries for the Blind demonstrated in this Project that, through specially designed screening, product development, engineering, and rehabilitation techniques, such products can be produced by a diversity of workshops for the blind. The outstanding finding was that, assisted by product development and related activities, workshops are able to serve growing proportions of multi-handicapped blind persons with unprecedented effectiveness. As a result of the demonstration, National Industries for the Blind incorporated the experimental procedures into its ongoing service to NIB-associated workshops and is planning to extend these procedures beyond the government-purchase area into the private industry sector.

I. THE MULTI-HANDICAPPED BLIND PERSON IN THE SHELTERED WORKSHOP: AN EMERGING PROBLEM

Multi-handicapped blind persons have been with us from time immemorial. However, because the impact of blindness itself is so dramatic and overpowering, it has been almost inconceivable to most people that the disabling effects of the loss of sight in combination with mental retardation, hearing loss, emotional disturbance, physical limitation, or aging could ever be overcome. As a consequence, most early efforts to educate and rehabilitate blind persons concentrated upon the "capable" blind individual - the one whose sole limitation presumably was his imperfect vision. Thus, in years past, with relatively few exceptions, schools and workshops for the blind traditionally gave priority to blind persons who were thought to be otherwise unimpaired.

As late as 1937, Wilber reported on a sample of residential school students who had been interviewed regarding their vocational plans. The small incidence of complicating handicaps in this group is indicated by the fact that 100% of them tested at IQ 85 or over, 94% were in good or fair health, and 70% felt at ease in the presence of sighted persons. For their part, most workshops for the blind in the earlier decades of the twentieth century continued to give priority to blind persons who had promising productivity and few work behavior problems. Yet, almost from the date of their founding, some workshops have admitted small numbers of multi-handicapped blind persons and, without fanfare, served them relatively effectively. For example, as early as the 1920's, the Industrial Home for the Blind was admitting growing numbers of deaf-blind clients into its workshops.

Since World War II, the mounting caseload of aged and multi-handicapped blind persons applying for rehabilitation assistance has influenced all phases of service for the blind. For example, it is now widely believed that the blind workshop client without complicating disabilities who once was considered a long-term sheltered worker should be considered a candidate for competitive placement. Year after year this concept is not only achieving intellectual acceptance but is being implemented more fully in many workshops for the blind. Spurred by encouragement from National Industries for the Blind, most of these workshops are moving inexorably toward becoming specialized facilities for multi-handicapped blind persons. As a consequence of their growing success in placing the more vigorous and competent blind client in industry, they are turning their attention increasingly to the blind person with complicating physical, intellectual, emotional, and social problems. In doing so, however, workshops are discovering that the techniques developed

over the years for their less disabled blind clients are not equally relevant for the multi-handicapped. The central problem for them has been to change their organization, equipment, types of work, rehabilitation and employment procedures, training, and supervision that will make them more effective in coping with the difficult and often perplexing vocational adjustment problems presented by the multi-handicapped blind group. In the light of this problem, the objective of the NIB multi-handicapped Project was to explore a new products, rehabilitation and engineering approach through which workshops for the blind could make this transition successfully and which could enhance the quality and quantity of their services for multi-handicapped blind persons.

The Nature and Incidence of Complicating Handicaps Among Blind Persons

MacFarland (1964) defined the multi-handicapped blind person as one with two or more relatively severe disabilities, one of which is blindness. The range of disabilities other than blindness in this group runs the gamut of physical, intellectual, and emotional conditions and includes such handicaps as physical limitations, mental retardation, neurological impairment, emotional disturbance, the frailties of advancing age, hearing impairments, and social disadvantage. Although "hard data" about the incidence of such conditions in blind persons are rare, those who serve the blind estimate that the multi-handicapped subgroup makes up a substantial proportion of their caseloads. As an example, MacFarland (1964) suggested that 80% of blind clients seeking rehabilitation service are multi-handicapped.

The evidence concerning additional disabilities in blind children is somewhat firmer than that for adults. Wolf (1967) cited evidence that the higher survival rate among premature infants is a factor in increasing the incidence of complicating multiple disabilities. In one study (Drillen, 1959), 22% of 92 babies weighing three pounds or less had major physical handicaps, and in another study (Lubchenko and others, 1963) it was found that 69% of one group of premature babies had visual and neurological disabilities. It is thought that a large proportion of premature infants who are aided by medical science to survive do so only by paying the price of lifelong disability. Such disability often takes the form of impairments in two or more organ systems, including the eyes and the central nervous system (Hoffmeyer, 1961).

In his review of the blindness "system," Cohen (1970) observed that important changes have been taking place in the blind population, marked by a rising proportion of aged, multi-handicapped, and minority group poverty-stricken blind persons. He noted that, within the blind population, the percentage of those aged sixty-five and over ranges from 40% to 65%, depending upon the area of residence, and that the major causes of blindness today are those that are closely associated with multiple disability, including senile degeneration, diabetes and other diseases related to old age, and genetic and prenatal influences. Cohen concluded that these population trends can be expected to continue for some years to come.

The precipitants of multiple disability among the blind have been discussed to some extent in literature. Patz (1969) reported that blindness caused by diabetes has become a major health problem in the United States. In fact, this disease now is thought to be the second most prominent cause of blindness among adults and is expected to become first in rank in this field in the mid-1970's. This trend is thought to be related to the growing life span and the fact that the longer the duration of a diabetic condition the greater is the possibility for the development of resultant ocular damage. Generally confirming these conclusions, Davenport (1970) noted that 50% of diabetics become legally blind within five years of the onset of the diabetic condition and that during the next decade diabetes will become the leading cause of blindness in this country.

Mental retardation that accompanies blindness seems to be associated with premature birth and congenital conditions which attack not only the visual mechanism but central nervous system tissue, as well. Indeed, mental retardation has become such an important component in blindness that some authors [Davidoff (1971) and Alexander (1969), for instance] call for special educational and vocational programs for intellectually limited blind persons, including the selective use of sheltered workshops, work activity centers, and homework projects.

The National Society for the Prevention of Blindness (1966) has underscored the relationship between aging and blindness. The Society estimated that almost half of the legally blind people in the United States are sixty-five years of age or over and that more than half of all new cases of blindness occur in persons in this age group. With the exception of prenatal influences, the leading causes of blindness (senile cataract, glaucoma, diabetes, and vascular disease) are intimately related to the aging process. In concluding that the problems of blindness are, to a large extent, the problems of advancing age, the Society noted that geriatric blindness often is accompanied or caused by other disorders which complicate the life adjustment of the older visually impaired person. Reinforcing these findings, Schloss (1971) observed that about 75% of the persons who lose their sight each year in this country are forty years of age or over. The author also noted that the combination of age and blindness makes it even more difficult for the members of this group to obtain needed services from state rehabilitation agencies.

For more than fifty years, deaf-blindness has been a special interest of the Industrial Home for the Blind. Prior to developing the National Center for Deaf-Blind Youths and Adults, this organization engaged in several research projects which generated important data concerning this double disability. In one of seven volumes published by the IHB, in the course of reporting findings derived from a survey of deaf-blind persons, Rusalem (1959) noted that this group had unexpectedly promising vocational potentialities but was deterred from achieving vocational goals by a widespread lack of public awareness of the existence of such potentialities. Although deaf-blindness

accounts for a relatively small proportion of the blind population, the drama of this double loss, the influence of Helen Keller, and the vital contributions of the IHB have focused considerable interest upon this special multi-handicapped population [Bettica and Newton (1966) and Rusalem (1966)]. It is generally recognized that hearing losses less severe than those found in the IHB deaf-blind group are common among older blind persons but relatively little literature concerns the rehabilitation of this "hard-of-hearing" blind group.

Emotional disturbance often complicates the rehabilitation process for blind adults. In some instances, the mental health problens of such individuals are mild or situational and respond readily to therapeutic interventions. On the other hand, a considerable number of blind persons are compelled to cope with long-standing and, perhaps, chronic, emotional problems which require comprehensive programming and special environments. In summing up the variables in service to the emotionally troubled blind person, Bauman (1971) observed that successful attempts have been made to rehabilitate such persons and that these attempts are characterized by understanding, patience, trust, and warm interpersonal relationships.

In general, specialists in service to blind persons appear to agree upon the following:

1. Blind clients with complicating other disabilities are requesting rehabilitation service in greater numbers than in the past.

2. Prenatal and congenital conditions, diabetes, and other illnesses associated with advancing age apparently are important factors in accounting for the multiple disabilities of many of these applicants.

3. The trend toward multi-disabled persons constituting a higher proportion of the blind group, in general, probably will continue for the next decade, at least.

4. Special programming is required for this group.

5. The services of rehabilitation specialists in various disability areas will be required to cooperate with workers for the blind in developing comprehensive programs for multi-handicapped blind individuals; for example, specialists in retardation providing consultation in relation to retarded blind clients.

6. Present provisions for the multi-handicapped blind group are inadequate. This inadequacy is manifested especially in the relatively small number of special rehabilitation environments such as sheltered workshops and work activity centers that are keyed to their needs.

Vocational Problems of Multi-Handicapped Blind Persons

Practical experience in serving multi-handicapped blind persons confirms the beliefs that their combined disabilities often impose severe vocational limitations upon them. Such limitations may be so restricting in their effects that the individual concerned may be able to function vocationally only under the special conditions available at a sheltered workshop, work activities center, or his own home. Although, in and of itself, blindness can curtail the scope and effectiveness of a person's work behaviors, when it appears in combination with other disabilities, the impact may be magnified many times.

The extent to which psychosocial factors intensify the effects of multiple disabilities has been suggested by a number of authors. Freedman (1967) concluded that the psychological concomitants of multiple disability may be even more constricting in relation to personal and social adjustment than the physical limitations, per se. In this frame of reference, Freedman noted a number of psychosocial components which can contribute to the total multiple disability, including the attitudes of the disabled person, his family, his friends, and those in the educational, vocational, and recreational milieu in which he functions and the facilities that are available to him in the community.

Multi-handicapped blind persons tend to suffer severe economic deprivation, as a consequence of which, many of them become welfare recipients, living in poverty and want for most of their lives. Those who do enter some form of sheltered employment also may have modest incomes. Thus, Rabby (1971) in testimony before the Illinois Legislature noted the low wages received by blind and multi-handicapped persons in sheltered workshops. In some instances, this income is so limited that supplementary public assistance grants are required.

Recognizing that multi-handicapped blind persons often constitute a special problem for vocational rehabilitation and sheltered workshop programs, Michal-Smith (1969) advocated a form of guaranteed income for this group, regardless of their vocational qualifications, a measure that he feels would relieve multi-handicapped persons and their families of feelings of guilt and anxiety. As he sees it, this provision would have additional value in positively influencing family attitudes, thus avoiding interpersonal problems which further reduce the vocational effectiveness of the multi-handicapped blind person.

Also acknowledging the need for modifying current attitudes toward multi-handicapped blind persons in our society, Salmon (1965) stressed the rehabilitation potential of such individuals. Basing his beliefs upon an extended experience in serving multi-handicapped blind clients, Salmon concluded: (1) some individuals in this group can become socially and economically self-sufficient; many others can achieve a satisfying and productive level of partial

independence, (2) multiple handicap in which blindness is one of the elements does not necessarily contraindicate successful rehabilitation, (3) such rehabilitation must be multi-disciplinary in approach and involve cooperating specialized agencies which are conversant with the complicating disabilities in each case.

It may be concluded that multi-handicapped blind persons do have special vocational problems that often require differentiated rehabilitation programming. If anything, the tendency is to focus upon these limitations too narrowly and to overlook the vocational potential of the multi-handicapped blind individual. Although the limitations in these cases cannot be minimized, it has been found that they are not as restrictive or all-encompassing as professional workers generally suppose. A repeated theme in the literature is that the attitudes of those who serve the multi-handicapped blind person sometimes constitute a deterrent to his becoming a remunerative worker and a more independent human being. The literature suggests that multiple handicap which includes blindness as one of the components would be less limiting than it is now if workers for the blind and their colleagues in related fields viewed this group with less pessimism.

The Role of the Sheltered Workshop in Service to Multi-Handicapped Blind Persons

In his extensive review of the history of sheltered workshops for the blind, Seward (1968) repeatedly noted the special value of such workshops for multi-handicapped blind persons. The needs of this group are often cited as one important reason for maintaining specialized workshops for the blind since shops serving many disabilities have yet to demonstrate their willingness and competence to accommodate multi-handicapped blind persons needing a sheltered work environment. It has been argued that, since the number of multi-handicapped blind persons seeking assistance from workshops seems to be on the rise, work stations in specialized workshops for blind and multi-handicapped blind persons will be in even greater demand in the future. Seward predicted that with workshop production for government-use expected to increase during the next decade, workshop opportunities for multi-handicapped blind clients will rise accordingly. One may conclude that multi-handicapped blind persons and workshops for the blind have mutual interests and that, working together in the 1970's, both can make a more effective contribution to our economy and to the welfare of the American people.

An optimistic view of the future, however, is tempered to some degree by other writers who perceive a need to solve important present-day problems in the sheltered workshop movement. For example, Wilkerson (1965) expressed concern about workshop management and questioned the level of inherent efficiency of workshops that enroll twenty or fewer clients at any one time. He contended that the size factor alone sheds doubts on the concept of specialized uni-disability workshops except in a small number of very large cities. If Wilkerson's position is sound, a re-evaluation of the role of

"general" workshops in serving multi-handicapped blind persons will be required in many communities since, in his view, the future is not bright for smaller specialized workshop programs. In regard to another workshop problem, Carroll (1966) called for "adequate" wages for sheltered workshop employees, regardless of their productivity. However, in recognition of the fact that the adoption of his proposal would impose financial strains upon workshops, he suggested that workshops should find other sources of funding, a possibility that many workshops have explored already. Furthermore, Carroll indicated that some severely disabled persons might be helped to find satisfactory alternatives to a remunerative work experience, one of which could be the achievement of self-fulfillment outside the present economic system, perhaps, in recreational activities.

In a related discussion, Cohen (1968) questioned whether workshops that serve the severely disabled can ever manage, over the long-run, to operate without receiving continuing subsidies or other forms of community assistance. To achieve economic self-sufficiency, workshops would have to fund the high costs of supervision, equipment, training, supportive services, overhead per work station, raw materials, and labor time per unit produced, a task that seems very difficult indeed. When workshops open their doors to multi-handicapped clients, they tend to incur costs that exceed the operating costs of comparable industrial enterprises. In view of this, Cohen counseled workshop directors to perceive the workshop program for the multi-handicapped in human, rather than economic terms, and to justify its existence on that basis rather than on "profits." It was his view that a workshop that really provides a service-oriented rehabilitation and employment program for the multi-handicapped will not be able to "pay its own way." In answer to those who urge economy measures in operating workshops, Cohen concluded that improved management efficiency will ease but not eradicate the cost problem in serving the multi-handicapped.

Not everyone agrees that sheltered workshops as presently constituted can provide altogether satisfactory service for the severely disabled even under improved circumstances. After noting the trend toward admitting larger numbers of this group into workshops, Gellman (1967) suggested the possibility of replacing present long-term workshops with some other type of facility, perhaps an "activity workshop" or a "non-competitive work program." Approaching the workshop situation from another point of view, Gersuny and Lefton (1970) discussed the perplexing dilemma of reconciling client and employee roles in sheltered workshops. They concluded that a substantial proportion of workshop personnel perceive the workshop in business rather than rehabilitation terms and, by implication, indicated that workshops should endow the client with an employee rather than a client status. If this position is valid, it has important implications for multi-handicapped blind persons whose work potential is limited and for whom rehabilitation is a continuing need. Confronted by the need to regard clients as employees, some workshops may become even less receptive to such individuals than they are today, fearing that if an employee status (with all

accompanying prerogatives) were to be accorded to their clients, the continued operation of many workshops would become impossible.

Goodpasture (1963) writing in the framework of his experience at National Industries for the Blind, did not minimize the problems that confront workshops that attempt to serve multi-handicapped blind persons. However, in taking a longitudinal look at workshops, spanning the thirty-year history of NIB, he concluded that workshops for the blind are accepting and serving effectively growing numbers of multi-handicapped blind persons. In relation to severely limited blind clients, Handel (1965) pointed out the value of workshop programs but expressed his concern that under current conditions, workshops as a group, lack the resources to serve more than a small proportion of those who could conceivably benefit from long-term service.

Although Scott (1967) questioned the desirability of retaining in workshops blind clients who could take their place in competitive industry, his remarks are less relevant for the multi-handicapped blind groups whose work capacity is so sharply restricted by their combined disabilities that they are unacceptable to industry. But, even for this latter group, Scott probably would want to make certain that every effort had been made to help the individual to enter "outside" employment whenever that goal seems feasible.

Most of those who have written about multi-handicapped blind persons agree that sheltered workshops constitute a vital program component for this group. Although questions have been raised about the performance level of some workshops in relation to the vocational needs of multi-handicapped blind persons, few alternatives to the workshop have been suggested. On the contrary, as already noted, many writers hold that workshops for the blind gradually are becoming facilities that serve multi-handicapped blind persons almost exclusively. In this context, many authors have called for changes in workshop programming that will place much less stress on client productivity and the economic self-sufficiency of workshops and more on client development and satisfaction.

Suggested Modifications in Workshop Procedures for Multi-Handicapped Blind Clients

Writers in this field have offered suggestions that they believe would make workshops for the blind more responsive to the needs of multi-handicapped blind persons. Among these suggestions are:

1. Greater emphasis upon early placement in industry of qualified multi-handicapped blind persons [Alford (1969) and Prause (1968)].

2. The adoption of behavior modification (operant conditioning) techniques in an effort to enhance the workshop performance of multi-handicapped clients [Zimmerman, Overpeck, Eisenberg,

and Garlick (1969); Zimmerman, Stuckey, Garlick, and Miller (1969)].

3. Exploration of the advantages of using the government-purchase resources opened to workshops under the 1971 amendments to the Wagner-O'Day Act, perhaps creating in this way still other job opportunities for blind persons with complicating disabilities [McDaniel (1971)].

4. Acceleration of the movement among workshops toward achieving accreditation and/or certification. Conformance to desirable workshop standards is believed to be a key step toward elevating the quality of workshop service available to multi-handicapped blind persons [Johnson (1970)].

These suggestions (as well as others) are thought to have considerable merit and warrant early implementation. In addition, however, because of its interest and special expertise NIB selected the areas of new products and engineering as the cornerstones of its work on behalf of multi-handicapped blind persons. This was done in the knowledge that other approaches to the problem also hold promise for improved workshop service for this group and, consequently, merit similar intensive trial and evaluation. Perhaps, such companion demonstrations will be undertaken in the near future, using the NIB project as a model for testing various interventions for multi-handicapped blind persons in workshop settings.

Outcomes of Workshop Programs for Multi-Handicapped Blind Clients

Most workshop directors and supervisors who have made a conscious effort to serve multi-handicapped blind clients have reported positive experiences with the group. Indeed, they often cite anecdotal case evidence to illustrate their point. Relatively little of this material, however, finds its way into the literature. As a consequence, much of this experience is unknown to others, with dissemination being slow, if it occurs at all. An exception to this rule is found in the case of a blind paraplegic reported by Grubisch (1971). In this instance, state rehabilitation agency services enabled this multi-handicapped blind individual to develop a new career in computer programming through obtaining a suitable job with a local telephone company subsequent to training. In addition to his regular duties, this man assists his employer to match other handicapped persons to jobs in the firm, serves as president of a nursery for blind children, and is building his own home.

In a comparison of "successful" and "unsuccessful" blind rehabilitation clients in California, Knowles (1969) found that orientation and mobility constituted the single variable that most strongly differentiated the two groups. On the basis of these findings, it may be hypothesized that any

serious secondary disability (such as a hearing handicap, mental retardation, neurological impairment, or advancing age) which constricts orientation and mobility to a serious degree in a blind person is likely to impede rehabilitation performance. Although an uncritical application of these findings to all multi-handicapped persons is risky, the data do suggest that multi-handicapped blind persons who are restricted in their ability to get around should be expected to experience greater difficulty than other blind clients in achieving vocational rehabilitation goals.

MacFarland (1964) cited compelling evidence that workshops for the blind can, in practice, serve multi-handicapped blind persons effectively. As MacFarland noted, two workshops for the blind in Virginia stressed the admission of multi-handicapped blind persons to their programs. In time, initial internal staff resistance to this policy was overcome and favorable results were reported, including the fact that the earnings of multi-handicapped blind clients were satisfactory and that no worker in the group had to be laid off during a period of some six years. MacFarland concluded that a thorough preparation of the multi-handicapped blind individual for entry into the workshop is essential.

At best, the outcome data concerning the workshop experiences of multi-handicapped blind persons is fragmentary. These fragments, however, are consistent in indicating that workshops in various parts of the United States have found it not only possible, but even desirable, to serve multi-handicapped blind persons. Where there is an administrative commitment, proper preparation of the client for the workshop experience, and a sound rehabilitative workshop program, blind persons with complicating disabilities seem to adapt well to the workshop environment and, in some cases, subsequently enter competitive employment. The problem seems to lie less in the actual experience of serving multi-handicapped blind persons than in the process of changing attitudes so that workshops become more receptive to, and more individualizing in programming for multi-handicapped blind persons. Whenever proper conditions are established for this group, they appear to perform creditably in sheltered remunerative work situations. Although modification of attitudes is vital, it is also essential to establish and maintain workshop conditions that facilitate client adjustment and foster high client performance levels. The NIB project was addressed primarily to the latter problem.

II. BACKGROUND OF THE PROJECT

A. The Employment Needs of Multi-Handicapped Blind Persons

Although the scope and functions of workshops for the blind have expanded significantly during the past generation, their distinguishing feature continues to be the provision of a remunerative work experience to selected visually handicapped persons under controlled conditions. Their identity is defined by the specialized employment opportunities that they offer to blind and multi-handicapped blind persons, opportunities that are unavailable elsewhere in the community. With due respect to all the ancillary and supportive rehabilitation services that many workshops for the blind now provide, such services attain relevance in a sheltered workshop setting because they appear in a remunerative work context. In essence, without work there is no workshop. Consequently, from the earliest beginnings of the sheltered workshop movement in the United States in 1840 to the present day, workshop administrators, supervisors, counselors, clients, and community members have been concerned about the never-ending problem of assuring a continuing flow of work to those who need it.

In view of the ebb and flow of economic cycles, changes in industrial technology, the attitudes of employers and labor unions, and varying degrees of cooperation from the community, most workshops have both good and bad times in relation to having sufficient remunerative work at their disposal to meet growing client needs. In the past, the emphasis was upon having enough work of any kind. This was tenable because many workshops served comparatively capable blind individuals who were able to adapt to a variety of work tasks at different skill levels. Thus, changeovers from job to job could be accomplished with modest amounts of disruption in the work force and minimal hardship to the individual workshop client. In recent years, however, the problem of quantity of available work has been joined by the problem of suitability in fashioning workshop programs for the blind.

Despite the fact that concern for suitability was evident in workshops for the blind in the past, this concern focused primarily upon the visual demands of the work tasks. So long as a job could be performed without vision, it was a possible candidate for inclusion in the job repertoire of the workshop for the blind. In recent years, however, the nature of blind workshop clients has changed in the direction of a higher proportion of individuals who, in addition to blindness, are coping with complicating disabilities such as mental retardation, hearing limitations, emotional problems, cultural deprivation, physical restrictions, and advancing age. The combination of blindness and one or more of these disabilities constitutes

an imposing vocational handicap. In reality, the multiple disability resulting from the interaction of two or more limiting conditions (one of which is blindness) is greater than the sum of the individual disabilities, per se. During the past ten years, sheltered workshops for the blind have been asked to serve growing numbers of multi-handicapped blind persons whose work capacities are more severely restricted than those of the traditional blind client of twenty years ago.

As workshops for the blind assume increased responsibility for serving the multi-handicapped blind group, it becomes apparent that the "normal" flow of work in most workshops is insufficient quantitatively and qualitatively to meet the needs of such clients. Indeed, during the past few years, most workshops for the blind have had continuing problems in obtaining ample suitable remunerative work for their less handicapped clients, let alone the multi-disabled. Thus, in planning for this "new" workshop population, most workshops for the blind are re-evaluating their programs in order to determine the suitability and availability of work tasks for multi-handicapped blind individuals.

The problem is not a new one. Multi-handicapped blind persons have been with us since the dawn of recorded history. However, only within recent years have public officials, workshop directors, and members of the community come to recognize the rehabilitation needs, rights, and potentials of this group. In an earlier time, when blindness alone was perceived universally as an almost insuperable handicap, there was little reason to feel concerned about blind persons with additional handicaps. In those days, blindness, itself, was a massive challenge that baffled most Americans. In fact, just a few years ago, it was almost inconceivable among both professional and lay persons that blind persons who had complicating disabilities could ever be rehabilitated.

The growing level of sophistication of rehabilitation workers, the heightened public interest in the status of very severely disabled persons, and the pioneering work with the multi-handicapped persons performed by a few organizations such as the Industrial Home for the Blind has created an atmosphere in some communities that is more favorable for the multi-handicapped blind group. Despite this, until recent years, most of the members of this group were destined to live out their lives in isolation, idleness, and poverty. Deprived of a part in the ongoing life of the community and denied the satisfactions of work and social relationships, multi-handicapped blind persons were unproductive, dependent individuals who constituted a burden to their families and their communities. Of the many important events in the history of rehabilitation services for multi-handicapped blind persons, none was more revealing than the meeting of rehabilitators from many lands at the 1964 World Assembly of the World Council for the Welfare of the Blind held in New York City. It was at this meeting that recognition was fully accorded to Article 26 of the United Nations Declaration of Human Rights as a guarantee of vocational rehabilitation opportunities for all victims of disease or

accident that has particular relevance for the multi-handicapped blind group.

This and other conceptual advances were accompanied by practical developments in clinical practice. Following the lead of other rehabilitation pioneers, an increasing number of workshops for the blind began to accept limited numbers of multi-handicapped blind persons into their programs. Aware of this trend and sympathetic to it, Salmon (1966) acknowledged the special role of sheltered workshops for the blind in meeting the needs of blind persons with multiple disabilities. In his conclusions, he called for additional demonstrations of innovative service programs for this group in the light of the fact that earlier projects of this type had proven uniformly successful. Salmon recognized that whenever and wherever workshops for the blind had made a special effort to adapt their programs to the multi-disabled group, positive results had been achieved. Contemporaneously, in England, Lloyd recognized the vocational potential of most multi-handicapped blind persons and called for communal vocational centers which would provide new and expanded work opportunities for the members of this group.

In America, in the mid-1960's the problem of multi-disability was being sharpened by the emergence of rubella as a major cause of visual loss, a cause that did not limit itself to one organ system or bodily function but which often involved several areas of adjustment. As the rubella group advanced through school, it became increasingly clear that special vocational facilities would be needed by a substantial proportion of this group and that sheltered workshops offered a primary resource for the vocational development of these youngsters. Concurrently, with the life expectancy of adults rising, more people were surviving into their mature years during which the risks of acquiring multiple losses were substantially higher. Thus, many more older individuals than in the past were found to have multiple disabilities. Yet, despite these disabilities, they wanted, needed, and qualified for special vocational programs. Concurrently, in line with a growing humanitarianism, rehabilitation workers became more accepting of the multi-handicapped and, in increasing numbers, began to regard them as potential wage-earners if suitable rehabilitation and employment opportunities could be found for them.

In 1968, when the current project was launched, mounting numbers of blind persons with other disabilities were appearing at state vocational rehabilitation offices requesting vocational service. This tide became so great that it seemed as though the client whose only disability was lack of adequate vision became a rarity. More commonly, blind applicants at public and voluntary rehabilitation agencies were bringing complicating intellectual, emotional, physical, and social problems with them as they made application for assistance. In the ensuing years since 1968, the tide of multi-disabled blind clients has not abated. On the contrary, the flow of such individuals into rehabilitation service has increased and, today, even more

obviously than in 1968 when this Project was initiated, the multi-handicapped blind client group constitutes a major challenge to rehabilitation and employment programs for the blind. Seeking the benefits of remunerative work and restitution to the social life of the community, many multi-handicapped blind clients who are requesting services from existing specialized and general agencies have transitional or long-term needs for sheltered workshop experiences.

Although most agencies for the blind in 1968 were confronted with the need of serving larger numbers of multi-handicapped individuals, few were equipped adequately to cope with the expanded demands being made upon them. The dilemma was that traditional forms of workshop employment were of limited value in serving the multi-disabled group since the jobs embodied in such employment were more suitable for individuals whose only problem was a visual limitation. Customarily, the job repertoire in workshops for the blind consisted largely of work tasks that were adapted to individuals with relatively high work capabilities who while coping with visual problems were relatively unimpaired in their other organ systems and functions. Thus, attempts to "shoe-horn" the multi-disabled blind group into these more demanding jobs had mixed results. In some instances, the requirements of typical workshop tasks were too rigorous; in other cases, workshop personnel lacked the skills and patience to adapt administratively and technologically to the new group; and in still other situations, customary workshop induction, training, and counseling procedures were woefully inadequate for the blind person with other complicating problems. As a consequence, during the pre-Project period, more rehabilitation failures occurred with the multi-handicapped blind group than should have been the case, creating discouragement for the client and disillusionment for the workshop staff.

These vocational failures imperiled the needed growth in service to multi-handicapped blind persons since the paycheck usually is perceived as the payoff of vocational rehabilitation. Even the introduction of more sophisticated pre-employment rehabilitation services mattered little when post-rehabilitation sheltered or unsheltered jobs were not waiting for the multi-handicapped blind person at the end of the road. Unfortunately, due to lack of suitable work, intensive and costly rehabilitation services were not always capped by entry into suitable employment. In the course of this frustrating experience, it became evident that, in addition to vital support services, multi-handicapped blind persons needed workshop opportunities that are more compatible with their abilities and limitations, that make special provision for their learning and adaptation problems, and that provide an ongoing flow of appropriate jobs that are satisfying, significant, and reasonably remunerative. At that time, as today, the problem seemed more comprehensive in scope than anyone had supposed and it became clear that no single workshop could mobilize the extensive occupational research and engineering resources needed to solve it. Being the object of intensifying pressures from the community to work more extensively with multi-handicapped blind persons and moved by their own sense of responsibility to do so, many

workshops for the blind turned to National Industries for the Blind for leadership in coping with this situation.

B. The Role of National Industries for the Blind (NIB)

National Industries for the Blind came into being in the wake of one of the most critical turning points in the history of service to blind persons. In response to the need for widened employment opportunities for the blind, Senator Robert F. Wagner and Representative Caroline O'Day jointly introduced a bill into Congress designed to solve some of the prevailing vocational problems of those with limited or no vision. Passed in 1938, the Wagner-O'Day Act required executive departments of the Federal Government to give a specified priority to workshops for the blind in their purchases of qualified products, stipulating that an organizational mechanism was to be developed through which workshops could communicate and work with Government toward the implementation of the Act. For its part, Government was empowered to establish a Committee on Purchases of Blind-Made Products to cooperate with the coordinating representative of the agencies for the blind in fulfilling the intent of the Act.

Shortly thereafter, National Industries for the Blind was organized by specialized leading agencies in cooperation with the American Foundation for the Blind to administer the program by serving as the allocation agency for the participating workshops. In its first year of operation, the Wagner-O'Day Act generated relatively modest business for the workshops. Thus, during that period, thirty-five workshops for the blind sold $220,000 worth of products to government. The major products included in these sales were brooms and mops. Since then, year after year, workshop income from this source rose as the product "mix" broadened to include cocoa mats, pillowcases, mattresses, and deck swabs. In 1948, another major program expansion occurred as sales were initiated to military commissary stores and naval exchanges.

When it became apparent that government business needed supplementation in the consumer area, NIB launched SKILCRAFT, an organizational vehicle through which blind-made products entered the commercial market in competition with other manufactured goods of the same type. As may be expected, the broadened scope of the program brought NIB and its associated workshops into even more effective relationships with each other. As government and nongovernment business increased, these relationships became increasingly firm in the succeeding years. One manifestation of the enhanced cooperation between NIB and its associated workshops was the growing encouragement that the shops gave NIB to assume responsibility for a widening group of problems. Thus, in recent years, NIB has augmented its rehabilitation consultation, engineering, management, training, marketing, product design, and new products services to cooperating workshops. As a result of this stepped-up effort, the quality of workshop assistance to blind clients has been elevated significantly throughout the United States.

Today, NIB conducts a wide-ranging national program that contains many varieties of technical, professional, and research activities. First and foremost, NIB accounted for workshop product sales of $47,852,229 during the 1971 fiscal year ($14,788,361 in Federal Government sales; $3,561,127 in military resale; $25,737,511 in sales to state-use purchasing groups, service organizations, institutions, agencies, and commercial firms; and $3,765,230 in subcontract sales). These sales provided employment in eighty-two workshops for the blind in thirty-five states for four thousand three hundred forty-nine (4,349) blind persons, of whom one thousand six hundred and sixty-seven (1,667) had other vocationally significant complicating disabilities. This blind and multi-handicapped blind group earned $9,012,352 in wages in fiscal 1971, representing an average hourly wage per worker of $1.75. In addition to making these record sales and employment figures possible, NIB provided an extensive rehabilitation consultation service to its affiliated workshops, sponsored sales, training, and research and development conferences, conducted a demonstration workshop in Hazlehurst, Mississippi, to devise and test new products and innovating production procedures, and engaged in special projects aimed at developing improved services to multi-handicapped workshop clients.

In essence, NIB interacted with, and supported the work of a large majority of the local and state workshops for the blind in the United States and, through its efforts, encouraged them to upgrade industrial, management, and rehabilitation services in every department. In view of the special NIB role in this field, it was natural for workshops for the blind to turn to it for assistance with the problems of establishing viable workshop service for multi-handicapped blind persons.

In response to this expressed need, in 1966, NIB applied for and was awarded a planning grant by the Social and Rehabilitation Service of the Department of Health, Education, and Welfare to explore possibilities for expanding workshop opportunities for multi-handicapped blind persons. After a detailed survey of the status and problems of this client group and the resources available to them, the planning project concluded:

1. Although some two thousand to two thousand five hundred multi-handicapped blind persons were employed at the time of study, many times that number require workshop employment opportunities. The provision of such jobs will be necessary to effectuate a substantial reduction in the overwhelming rate of unemployment among multi-handicapped blind persons in this country.

2. Work tasks for the multi-handicapped blind group should be:

   a. As long-term and stable as possible with minimal requirements for periodic re-training.

   b. Simplified and broken down into finite uncomplicated

repetitive operations that fall within the skill level of seriously limited blind persons.

c. After proper redesign, should be capable of accommodating modest levels of manual and perceptual performance.

3. Although private industrial subcontracts and prime manufacturing offer some promise for the multi-handicapped blind workshop client, government business seems to offer the most favorable initial source of contracts for tasks of this type.

4. As a demonstration of the recommendation noted in the conclusion above, the planning project staff evaluated one government-use item - a flight dietary pack - and found that, after modification, it met the project-developed task criteria for the multi-handicapped blind client group. On the basis of this pilot experience, the planning project recommended that a similar developmental approach should be adopted in relation to other government-use products.

5. Government purchasing agents who were informed of NIB's interest in identifying suitable work tasks for multi-handicapped blind persons indicated an interest in the problem and expressed their readiness to cooperate with NIB in further explorations on behalf of this client group. Indeed, a survey conducted by the planning project staff of current government-use products under consideration by NIB for possible inclusion in the Federal Schedule of Blind-Made Products disclosed several items that had potential value for the multi-handicapped blind worker.

6. During this planning process, a number of NIB workshops indicated a readiness to participate in more intensive programs that NIB might organize to identify and develop new government-use products for the multi-handicapped blind group and several volunteered to serve as demonstration sites for testing and developing such new products.

7. It was concluded that any project that addresses itself to widening employment opportunities for multi-handicapped blind persons would be accorded complete cooperation from NIB's associated workshops and from the field of work for the blind, in general.

In view of these findings, after consultation with national, state, and local leaders, NIB made a commitment to develop a project designed to open

additional workshop job opportunities for blind persons with additional handicaps through new product and engineering channels. The Project application was prepared in the autumn of 1967 and was funded in the spring of 1968.

C. The NIB Concept

The vocational problems of multi-handicapped blind persons may be approached from several equally significant directions, including devising new counseling and training procedures, opening additional general and specialized rehabilitation and employment facilities for them, advocating their interests more aggressively in the community, assisting them, in some cases, to substitute recreational experiences for work activities, and mounting a massive employment campaign to place them in industry. Each of these approaches has merits and would be expected to yield benefits for some multi-handicapped blind persons. However, in conducting its planning project, NIB was consistent with its assigned mission in the field and focused its interest upon the vocationally-motivated, multi-handicapped blind individual who had few prospects in the near future for entering industry. By and large, it was felt that employment possibilities for this group are confined to the specialized sheltered workshop for the blind. Consequently, NIB decided to build the proposed project around sheltered workshop experiences. From that vantage point, it was apparent that most sheltered workshops for the blind currently were ill-equipped in terms of work tasks to accommodate larger numbers of blind persons with complicating disabilities. In actual fact, the sheltered workshops surveyed in the NIB planning project had great difficulty just in finding adequate quantities of work suitable for their less handicapped blind clients. Insofar as more severely limited blind persons were concerned, most of these shops were at a loss to understand how they could obtain the quantity and quality of work tasks needed to employ substantial numbers of them.

On the basis of these observations, NIB placed its emphasis upon the identification and installation of new government-use products that were or could be made suitable for blind persons with additional handicaps. This is not to be interpreted to mean that NIB concluded that the new product route was the only, or even the main one, through which specialized client vocational needs could be satisfied. On the contrary, the emphasis upon expansion of government-use product lines in workshops for the blind was perceived by NIB as only one means for improving rehabilitation and employment opportunities for this client group. It was hoped that, in time, NIB or another organization would find it possible to explore other routes to the goal.

The central concept that emerged from project planning was that government purchases constitute a potentially rich source of work for multi-handicapped persons if:

1. A special effort is made to identify suitable products and to work

assiduously toward their addition to government schedules of blind-made products.

2. The products concerned are carefully analyzed and engineered to maximize their usefulness for multi-handicapped blind workers.

3. Continuing technical and rehabilitation consultation is provided to local workshops during and subsequent to the development of a new product.

4. Assistance is given to local workshops to insure the fulfillment of their obligations under government contracts.

It was suggested that this multi-faceted concept of service to multi-handicapped blind persons could be readily implemented by NIB and its associated workshops and that the following might result from such an effort:

1. An unprecedented number of multi-handicapped blind persons would attain employment and adjust satisfactorily to workshop employment conditions.

2. The range of government-use items produced by workshops for the blind would be widened substantially with most of these new products requiring modest skill levels that are commensurate with the limited capabilities of multi-handicapped blind workers.

3. Impetus would be provided to workshops toward employing multi-handicapped blind workers in larger numbers both during and after the Project.

4. NIB would find the new product procedures developed for use with government-purchase items so useful that it would apply comparable development processes to other sources of work tasks.

III. THE INNOVATIVE NEW PRODUCT DEVELOPMENT, ENGINEERING, AND REHABILITATION PROCEDURES

A. The Sample

As one of its first orders of business, the Project Advisory Committee, composed of distinguished leaders in service to blind persons (see Appendix A for the names of the members), evolved a definition of the multi-handicapped blind person as a guide for all subsequent Project activities:

> "To be considered multi-handicapped, a blind person shall meet the definition of blindness contained in Section 404, Point 1, Paragraph P, of the VRA Regulations found in the Federal Register, Volume 31, No. 9, Part II (the customary definition of blindness used by vocational rehabilitation agencies) plus one or more additional major handicapping conditions such as deafness, mental retardation, advanced age (55 years and over), orthopedic conditions, emotional disabilities, or any other conditions which constitute substantial barriers to employment."

In view of their limited vocational capacities and the few vocational resources available to them, Project clients were expected to be unemployed, even though some of them received suitable vocational rehabilitation services. Furthermore, in some instances, such clients would have been denied rehabilitation service because employment opportunities did not exist for them even in the workshops of their communities. It was estimated by the Project Advisory Committee that by 1978 at least five thousand multi-handicapped persons would be in a position to benefit from suitable workshop employment programs devised expressly to meet their vocational needs.

B. The Client Service Process

As a national coordinating agency for workshops for the blind, NIB provides no direct service to clients. Therefore, in this Project, its client service role was to assist participating workshops to serve multi-handicapped blind persons more effectively through giving these shops greater access to new products, engineering consultation, and rehabilitation supports. Thus, with NIB encouragement and help, actual service to clients flowed directly from local workshops to multi-handicapped blind persons in accordance with local policies and procedures.

In coordinating Project activities, NIB advocated commonly accepted workshop service standards in such areas as:

1. Case-finding and intake.

2. Vocational evaluation and training.

3. Medical, psychosocial, and family assessment and treatment.

4. Long-term workshop employment.

5. Cooperation with state rehabilitation agencies and other groups in the community.

6. Placement in industry, whenever possible.

7. Follow-up.

The standards suggested by NIB are those proposed by the National Accreditation Council for agencies serving the blind and visually handicapped or by the General Council of Workshops for the Blind. In response to this standard-setting effort, a number of the participating workshops did apply for and receive accreditation and/or certification during the life of the Project. By and large, it was assumed that the participating workshops, in cooperation with their respective state rehabilitation agencies, would provide requisite rehabilitation services to Project clients, an expectation that was fulfilled in most cases. That this was so was confirmed by Project staff field visits to all participating workshops. Thus, it can be assumed that clients taking part in this Project usually received the benefits of the vocational rehabilitation resources that are normally available in their communities and that they became long-term sheltered workshop clients only after it had been determined that immediate placement in the private industry sector was not feasible.

C. The NIB Process

The NIB new product, engineering, and rehabilitation process in this Project will be discussed in detail later in this report. However, it is important to note at this point that NIB assumed a principal responsibility for the following Project functions:

1. Identification of suitable government-purchase products.

2. Development of these products for possible subsequent addition to the Schedule of Blind-Made Products.

3. Working with local workshops to set up efficient methods of producing each item and evolving means for employing the maximum number of multi-handicapped blind persons on the product in question.

4. Assisting workshops to set up the production facilities required to turn out the new products.

5. Providing rehabilitation consultation to local workshops so as to enable them to employ the maximum possible number of blind clients with additional handicaps in each instance.

6. Serving as a participant in the planning, development, and evaluation of Project-related rehabilitation activities with local workshops and their respective state rehabilitation agencies.

7. Developing, implementing, and evaluating more scientific workshop methods that could be used in evaluating, pricing, and compensating Project work activities.

8. Providing engineering advice and assistance to local workshops, particularly in reference to modifying jobs and equipment so as to make jobs more compatible with the work capacities of multi-handicapped blind workers.

9. Supplying Project evaluation and follow-up services to determine if the Project was achieving its objectives in the participating workshops and in general.

10. Developing special adapted equipment for local workshops and helping them to obtain such equipment for the use of multi-handicapped blind clients.

In brief, the function of NIB in this Project was to create new jobs for multi-handicapped persons by augmenting the flow of suitable work into selected sheltered workshops. The essential purpose of getting more business for local shops was one means for helping the shops to employ additional multi-handicapped blind persons on work tasks and under working conditions that are consistent with the assets and limitations of such clients. Thus, NIB stimulated new work opportunities in the government-use area and assisted cooperating sheltered workshops to administer these items in such a fashion as to increase employment possibilities for seriously limited blind persons.

D. The NIB Government Products Development Department

As indicated earlier in this Report, the development of new government-use products suitable for multi-handicapped workshop clients constituted the major thrust of the Project. NIB new product objectives were attained, for the most part, through the work of the NIB Government Products Development Department, an organizational structure created initially for the Project, but adopted by NIB later as an ongoing approach to new government products, in general.

The objectives of the newly-created Government Products Development Department were:

1. To identify and review items that are considered suitable for addition to the Schedule of Blind-Made Products, especially those that have potential for employing multi-handicapped blind workshop clients.

2. To cooperate with selected workshops in the development and testing of products selected for further study.

3. To expedite the addition of selected promising items to the Government Schedule of Blind-Made Products.

4. To assist workshops for the blind to evolve the industrial processes and techniques that are required to manufacture the selected items, with plans for the extensive use of multi-handicapped blind manpower.

Staffed by a Coordinator, two assistants, and a secretary, the Department drew freely upon other NIB specialist personnel in product development, engineering, management, costing, purchasing, and rehabilitation in performing its mission. Project personnel engaged in the search for new products were guided in their work by the criteria established for such products in the planning grant (as noted earlier in this Report), including long-term stability, simplicity of operations, and modest skill level required.

Although many useful suggestions for new products were made by personnel associated with NIB and members of the Government Committee on Purchases of Blind-Made Products, the NIB Government Products Development Department mounted its own product search program, an important component of which was the distribution of questionnaires to NIB-associated workshops, requesting data concerning their new products interests and capabilities. The workshops' responses to these queries were analyzed and the resultant data were organized to guide NIB's new product searches throughout the life of the Project. Simultaneously, contacts were established with various Government purchasing offices so as to inform them about the Project's new product emphasis and to obtain useful suggestions from official personnel who were conversant with government purchase plans and procedures. These person-to-person search activities were supplemented by continuing reference to detail-stock catalogs, procurement forecasts, and notices of item openings and awards.

In the beginning, the participating workshops stressed their need for additional sewing and packaging items. However, as Project informational and consultant activities took effect, the horizons of local workshops tended to broaden and a growing local workshop interest was expressed in other items, enabling the Government Products Development Department to widen its

search for items suitable for multi-handicapped blind workers. In fact, as the Project became established in the NIB workshop structure, a growing interest was observed in product diversification, a process that was hastened by Project educational activities and a concurrent curtailment in Government orders for products that required sewing and/or packaging operations.

As new products were identified, their specifications were carefully and thoroughly examined by Project personnel to ascertain their feasibility for workshops for the blind, and especially for blind workshop clients with additional disabilities. An initial favorable evaluation of a product led to consultation with one or more NIB-associated workshops which had both an interest in, and the capability for, developing and producing the selected item. In most instances, the workshops which were considered to have the greatest capability for working with a particular item accepted responsibility for participating in development activities related to that item. This responsibility consisted in initiating field production trials and using actual production methods and multi-handicapped blind workers, ascertaining the suitability of the product for fulfilling Project objectives. Feedback from these workshops coupled with observations made by the Project staff during the field trials generated data which then were used in the decision-making process concerning further development and adoption of the product.

Items that passed the field trials were recommended for inclusion on the Government's Schedule of Blind-Made Products, a step that led to subsequent requests by NIB and its associated workshops for authorization to produce the item. Ordinarily, production of a new item was undertaken by the workshop which had played a leading role in the field tests and, if necessary, by other workshops, as well. All the steps required for developing new items were part of a cooperative effort by NIB, government purchasing offices, the Committee on Purchases of Blind-Made Products, and the participating workshops, with all playing vital roles in the total effort. Thus, one of the central missions of the Project was to establish a linkage among these groups and to insure continuing communication and interactions among them. In most cases, this linkage was successfully accomplished by the NIB Government Products Development Department, not only during the period when a new product was under development but throughout its production phase, as well.

As the participating workshops and the Project staff gained experience in producing a particular item, this experience was used by the NIB Government Products Development Department as a basis for assessing other possible and related items and as a starting point for stimulating government interest in the Program, as a whole, and in working with the Project toward identifying additional new products, as well. In this way, the Department built a product pyramid, using each successful item as launching pad for other new items until the flow of new products into the workshop became gratifyingly consistent, enabling the Project to exceed its goals and paving the way for an ongoing NIB new-product effort that will continue long after the termination of the Project.

In summary, then, the NIB Government Products Development Department was assigned the task of initiating, analyzing, and implementing new products activities. In performing this task, it served at first as an experimental mechanism but as favorable results were noted, it soon became established as an ongoing NIB service with possible implications for non-government products. One index of its success is quantitative in nature. Under Department auspices, new items were developed in thirty-seven major product groupings with the cooperation of twenty-six workshops. Furthermore, at the time of Project termination, new product development was in process in an additional seventeen workshops. Furthermore, even though not every one of them actually entered into the production of new items, sixty-one of NIB's eighty-two associated workshops participated during the life of the Project in one or more Project activities related to the development of new products for the multi-handicapped blind client group.

E. The Project Engineering Function

The appropriateness and utility of a new product was measured in this Project by its adaptability to the needs of multi-handicapped blind and the workshops that serve them. In a few instances, items were so congruent with client needs and workshop conditions that relatively little outside assistance was needed to initiate successful production. More commonly, local action in regard to the new products could not be undertaken without the support of skilled engineers. Normally such talent was not available to the workshops for the blind participating in this Project. In view of the crucial need for industrial engineering to make many jobs more suitable for multi-handicapped blind workers, the Project evolved a strong component in this area designed to provide engineering guidance and consultation in new product development and implementation.

Even as a new product was still under Project consideration, the engineering arm of the Project swung into action, providing input concerning the feasibility of each item for incorporation into the ongoing programs of NIB-associated workshops for use with their multi-handicapped blind clients. Although this input usually required practical and hard-headed business decisions, visionary considerations were not ignored. The engineering staff, therefore, was responsible, not only for viewing the proposed new product in the framework of existing realities, but it had to look beyond the obvious to ascertain if innovative and automated approaches to an item might make it increasingly practical for that item to be produced by multi-handicapped workers at NIB-associated workshops. Not infrequently, creative ideas generated by the Project engineering staff opened avenues of productive enterprise that had been overlooked previously by Government and industry. Viewed in this light, a product that once had been considered impractical for the Project became transformed into one which subsequently led to the employment of many multi-handicapped blind persons.

As contracts for production of new government-use items began to flow into local workshops, each item was studied in relation to both the favorable and

unfavorable conditions that prevailed in each of the participating workshops. Not infrequently, engineering surveys produced recommendations for the elimination of certain shop weaknesses and the buttressing of certain shop strengths. These recommendations were communicated to the participating workshops and offers were made to assist the workshops to implement them. In every instance of this kind, the shops cooperated with the Project in making needed changes, thereby enhancing the possibilities of the new product being useful in the employment of multi-handicapped blind workers in that setting.

The selection and modification of production equipment constituted one of the major contributions of the engineering service to the achievement of Project objectives. Whenever commercially available equipment met the needs of multi-handicapped blind workers without adaptation, the sources of such equipment were made known to the participating workshops. Quite commonly, however, existing tools and machines were not suitable for this highly limited worker group. In such cases, commercially available tools were studied intensively by Project engineers and modified to make the machine operation task manageable by blind persons with other disabilities. In a few instances, major machine redesigning was necessary. On such occasions, the modified equipment was not only superior to the original in terms of its use by multi-handicapped blind workers, but others, as well. Thus, some of the changes introduced by the Project in standard machines were recognized by industry to be constructive improvements for all workers and, subsequently, were adopted by some firms for use in their regular operations.

Engineering and production services also were provided to the participating workshops in planning the line production of an item. In this process, the Project's emphasis was placed upon devising machine layouts and production procedures that fostered efficient plant operations and made it possible for a shop to use more multi-handicapped blind workers on a particular item. After initial layout studies had been completed, the Project engineering staff presented tentative layouts and scale drawings for discussion with local workshop personnel. After local approval for such layouts had been obtained, full-scale templates were laid out on the workshop floor, indicating the exact points at which both the standard and modified equipment was to be positioned.

As a final layout took shape, workshop personnel were helped to become familiar with the recommended equipment and instructed in its operation. Special emphasis in this process was placed on the techniques to be used in training multi-handicapped clients to work on the equipment, noting the instructional and supervisory procedures needed. Furthermore, shop personnel were taught how to adjust and maintain the new equipment. When the required machines were delivered, the engineering staff worked with workshop personnel to install and connect them, making certain that each was in proper working order in accordance with Project plans for its use. Simultaneously, Project personnel began training the multi-disabled blind persons who were to man the machines, using Project specialists as training consultants.

F. The Product Testing Laboratory

In support of the Government Products Development Department and the engineering staff, NIB established a product testing laboratory in St. Louis, Missouri, which coordinated its efforts with those of all other new product and engineering functions in the Project. In addition to performing product testing functions during the product development phase (through the use of sophisticated and technologically advanced equipment), the NIB laboratory engaged in extensive quality control operations for new product projects initiated by this demonstration. As an example, quality control for the ball-point pen item included checking on a visual comparator to insure that all dimensions of the product conformed to specifications, artificial aging in a humidity cabinet and a missimers chamber, placement on writing-out machines for a minimum of five thousand feet, and exposure to a weather-ometer to assay resistance to light and fading. These control measures enabled the Project and the participating workshops to maintain highly satisfactory levels of conformance to established standards and specifications and to minimize the proportion of product rejections. On the whole, the multi-handicapped blind persons who worked on these new items performed in accordance with stringent government standards within the high tolerance limits set by government and by the Project staff.

G. The Rehabilitation Service

It was recognized early by this Project that the development of suitable new products for workshops does not automatically insure augmented employment of multi-handicapped blind persons on such items. To facilitate higher employment rates for this special clientele, the Project incorporated a strong rehabilitation service in the Project which was designed to accomplish the following:

1. Sensitize workshops to the needs and potentialities of multi-handicapped clients.

   This was accomplished by having Project rehabilitation personnel address groups of workshop directors and supervisors at NIB meetings and conferences, consultative staff visits to individual workshops, and constant telephone and written communication with workshop personnel. In each instance, the Project staff presented "hard" evidence concerning the capacities of multi-handicapped blind persons as demonstrated in peer workshops throughout the United States and suggestions for serving the mounting multi-handicapped workshop population. This assistance, by widely respected rehabilitation specialists, helped many workshops to open their doors wider to the multi-handicapped and to serve them more effectively.

2. Relate new products and engineering developments to the needs of the multi-handicapped.

   This was accomplished by having the Project rehabilitation staff suggest to the participating workshops how each new product could be related to the needs and capacities of blind persons with additional disabilities. As new products emerged from the Project development process, the rehabilitation staff educated these workshops about the job demands of each item and indicated how multi-handicapped blind persons could be trained to meet these demands. In the main, the workshops were receptive to such presentations and made appropriate job stations available to the multi-handicapped blind group in increasing numbers.

3. Assist cooperating workshops to recruit, evaluate, train, and employ multi-handicapped blind persons.

   Many of these NIB-associated workshops had had limited experience in serving multi-handicapped blind persons. As a consequence, the staffs of such workshops had to be trained by Project rehabilitation personnel to rehabilitate and employ severely limited individuals. The special techniques of assessing, training, counseling, and supervising such individuals were taught to workshop supervisors and rehabilitators, with special reference to improving the functioning of multi-handicapped blind clients on the new products and helping them to derive maximum rehabilitation benefits from the remunerative work experience. These Project efforts were instrumental in making it possible for the participating workshops to achieve a high incidence of success in integrating multi-handicapped blind persons into their work forces without impairing quantity and quality of production and without weakening the workshop's capacity to meet production deadlines.

4. Provision of follow-up to multi-handicapped blind clients in the cooperating workshops.

   Multi-handicapped blind clients often encounter continuing adjustment problems in a work setting. Foreseeing the occurrence of such problems, the Project rehabilitation personnel maintained continuing contact with the participating workshops to make certain that they asked for early consultation when such work adjustment problems appeared on the horizon. By providing rapid and, sometimes, emergency help of this kind, the rehabilitation staff of the Project was able to help many difficult clients to retain employment on Project initiated items. This help frequently

consisted of training workshop personnel in special techniques of coping with the types of work adjustment problems that are generated by multi-handicapped blind clients in a workshop setting.

H. The Team Concept in Action

Although the three major demonstration services of this Project (new product development, engineering, and rehabilitation) all made their unique contributions to the total Project design, the Project outcomes achieved should be seen as the resultants of a team process in which all three were coordinated and combined. The Project administration established informal lines of communication that enabled staff members representing the three components to interface with each other, thus supporting, expanding, and extending the work of all. Periodic meetings coupled with continuing telephone communication and personal contacts insured continuing high levels of cooperation within the Project team. However, such cooperation was also helped by the fact that there was virtually no turnover among key Project personnel who, as members of a comparatively small staff, had a degree of continuity that permitted them to develop and maintain close working relationships with each other.

I. Project Evaluation

The NIB Board of Directors and administration consistently monitored all Project activities and participated in all major policy decisions. As a consequence, they played an important role in evaluating the Project's success in achieving its stated objectives. In ongoing reviews of the results of Project new products, engineering, and rehabilitation activities, the Board and administration found consistently favorable evidence to support the long-range value of the Project design and, as a consequence, made organizational provisions for continuing services in the new products, engineering, and rehabilitation areas beyond the termination date of the SRS grant.

In addition to Board and administration activities, other activities were undertaken to assess Project outcomes. Among these were:

1. Collection of statistical data about the experiences of clients and workshops in the Project.

2. Development of sample case histories of clients served under Project auspices.

3. Obtaining data concerning the response of workshop leaders to the Project.

4. Conducting a national conference to review Project findings with state rehabilitation officials.

5. Periodic reviews of all findings by a rehabilitation consultant.

6. Development of recommendations based upon Project findings by senior staff members of the Project.

IV. CLIENTS SERVED BY THE PROJECT

The client accounting systems used by the participating workshops varied in sophistication, accuracy, and inclusiveness. Some of the workshops apparently reported all the multi-handicapped blind persons who worked on Project-developed items; other workshops were more informal in their reporting practices and apparently overlooked undetermined numbers of such clients. With due regard for the possible sources of error due to workshop reporting procedures, it may be noted that twenty participating workshops reported that at least 291 multi-handicapped clients had achieved employment under Project auspices. Although other clients were mentioned, descriptive data are available for only 291 multi-handicapped blind persons. Spot checks of multi-handicapped blind client caseloads at four of these workshops and conferences with several of the respondent agencies led to the conclusion that a number of additional eligible clients participated in Project-initiated activities but were not reported for a variety of reasons. Thus, although information about only 291 clients is presented below, it should be recognized that this body of clients constitutes a sizable proportion of the Project caseload but by no means does it include all Project clients. As an educated guess, one might speculate that an additional fifty to one hundred multi-handicapped blind clients were served by the participating workshops without being reported, but this estimate should be viewed with caution.

The characteristics of the known sample included:

A. Sex

Males	58.4%
Females	41.6%

B. Mean Age

43.5 years

5.8% were 65 years of age and over.
37.2% were 55 years of age and over.

C. Median School Grade Completed

9.2

57.7% had an 8th grade education or less.
75.5% had less than a 12th grade education.

D. Client Earnings

Clients in this Project worked on a variety of workshop jobs during the three year duration of the demonstration. Some spent only weeks or months on Project activities, drawing most of their earnings from non-Project jobs which preceded or, in a few cases, followed the introduction of an item into a workshop during the Project tenure. Even after a client began to work on Project items, it was probable that either simultaneously or intermittently he would work as well on other products. Thus, the earnings reported below should not be viewed as total client earnings on all workshop products for the three-year period. On the contrary, these earnings represent only that part of a client's work time during which he was reported to have been assigned to the new products initiated by the Project.

Mean Earnings per Client	$1,817
Mean Hourly Rate per Client	$1.31
Total Reported Client Earnings on Project-related Items	$347,047

E. Clients' Disabilities

100.0% of these clients had combined disabilities consisting of blindness plus at least one other vocationally significant condition.

26.1% had two or more disabilities in addition to blindness.

The incidence of complicating disabilities was:

Physical disabilities, including cardiac, orthopedic, systemic, diabetic, and related disorders	53.1%
Social disabilities, including cultural deprivation, advancing age, and speech limitations	38.2%
Emotional problems	18.9%
Mental retardation	18.9%

These statistics add up to more than 100.0% because a number of these clients had more than one disability in addition to blindness reported for them.

F. Pre-Project Employment Status

Only 1.7% of these clients had participated in remunerative employment in a setting other than the reporting workshop immediately prior to entry into the Project. The members of this small subgroup were functioning at that time under unsatisfactory circumstances and required vocational reorientation under special circumstances similar to those provided by the Project.

Sixty-two and two tenths percent (62.2%) of these clients were already known to the NIB-associated agency at the time that they entered the Project and, in almost every instance, had been offered some pre-Project employment opportunities in the reporting workshop. Thus, 41.6% of the 291 reported clients had achieved full-time employment in the participating workshops, but this employment had not been altogether compatible with their special abilities and limitations. Indeed, in many instances, their workshop adjustment had become so tenuous that there was a question whether they would be continued in the shop over the long-term. In such cases, the pre-Project work available to this group usually had not been entirely satisfactory for them and, as a consequence, they had been regarded in the pre-Project period as marginal workers, at best. Of the 291 clients, 20.6% had been working "casually" in the reporting workshops at the time that they entered Project service. That is, owing to their severe limitations and the unavailability of consistent jobs within their capacities, they were called into the shop whenever suitable work was obtained and, then, were laid off, when such work petered out. Thus, of the total of 62.2% who had had previous vocational contacts with the cooperating workshops, 41.6% had had some full-time consistent pre-Project work experience at those shops but had been considered to be marginal workers while 20.6% had never achieved more than a casual work status with the workshop, having been employed only occasionally and sporadically, even under the controlled conditions of a workshop for the blind.

An additional 29.2% of the 291 clients were totally unemployed at the time of entry into the Project while 6.9% had just completed rehabilitation service immediately prior to entry into the Project.

G. Source of Referral

Of the 291 clients, 65.3% had been known previously to the

cooperating workshops. In most of these cases, however, such clients could not be served adequately under existing workshop conditions owing primarily to the lack of suitable work for them. When the Project became operative, the workshops, having been aware of the special problems of this group previously known to them, gave them preference in assignments to the new specially designed workshop tasks. Thus, the new products and processes pioneered by the Project made it increasingly possible for the workshops to work with multi-handicapped blind clients who had previously been served less than satisfactorily. Another 33.3% of the 291 clients were referred to the workshops for Project service by State rehabilitation agencies, and 1.4% were referred by other agencies.

H. Post-Project Service Rehabilitation Status

In conjunction with their participation in Project rehabilitation and employment activities at the participating local workshops for the blind, 87.3% of these 291 multi-handicapped blind clients had had their cases closed as "rehabilitated" at their respective state rehabilitation agencies. These closures require a minimum of thirty days of appropriate remunerative employment subsequent to the delivery of rehabilitation service. In most cases, the workshop employment obtained was fairly stable and adequate.

I. Reasons for Non-Rehabilitated Status

Thirty-seven of the 291 multi-handicapped blind clients served by this Project (12.7%) did not achieve State rehabilitation agency case closure as "rehabilitated" during the course of Project activities. However, twenty of these thirty-seven individuals were still active State rehabilitation agency clients at the time that the Project terminated. It may be presumed that some proportion of these twenty individuals will achieve a rehabilitated status in the post-Project period, thus elevating the Project's performance level relative to the proportion of rehabilitation case closures. Only thirteen of these thirty-seven cases had been closed as not rehabilitated by the State agencies during the Project. These individuals were considered to have a doubtful rehabilitation prognosis at best. It is important to note that the rate of successful rehabilitation case closures attained by this Project compares favorably with most other rehabilitation caseloads, even among client groups that are less disabled.

J. Post-Project Employment Status on New Products

Six months after the termination of the Project, 105 (36.1%) of these 291 clients were still assigned to the Project item on which they had been rehabilitated. The remaining 186 clients (63.9%) were accounted for as follows:

20 individuals were placed in industry.

29 withdrew from the labor market due to illness.

81 completed their work assignments on Project new products and, in recognition of their productivity, were moved to other work tasks in the workshop.

30 were unable to make a long-term adjustment to the workshop setting and were disengaged from other workshop activities.

9 moved out of the area served by the local workshops.

3 died.

14 were unaccounted for in terms of current follow-up status.

In summary, 70.8% of these 291 clients apparently were still in employment at some level six months after the termination of the Project with 20 of them having been placed in competitive industry. Of those still employed under sheltered conditions, the workshops reported that plans had been made to retain almost all of these individuals in the work force over the long-run.

K. Client Status as a Dependent Variable of Project Opportunities

It is very difficult to predict what the course of a person's life would have been under a set of hypothesized conditions. A host of unforeseen events may intervene to change even the most educated guess of a panel of experts in the field. Given this limitation, it is interesting to note that the reporting personnel of the cooperating workshops estimated that 58.8% of these 291 clients definitely would have remained unemployed without the opportunities provided by the Project's new products. Another 9.2% probably would have remained unemployed without this help. On the other hand, these workshop personnel felt that 24.7% would have been in full-time workshop employment and

5.8% would have been in part-time workshop employment regardless of Project interventions. Another 1.4% would have entered some form of employment without Project assistance but this form of employment was not specified.

L. Attributes of the New Products that Fostered Client Employment

The employment of a majority of these clients hinged upon the introduction of Project-sponsored new products into a local workshop. It may be presumed, therefore, that these new products had some attributes that customary work tasks in the respective workshops did not have. As reported by the workshop personnel participating in the Project, the "enabling" feature of Project new products was the simplicity of the work task. Through breaking down the job, redesigning job functions, and applying higher levels of automation to the work tasks, the Project and the participating workshops brought the skill level of the job into the orbit of multi-handicapped blind persons. In essence, the major contribution of the Project was to make it possible for more multi-handicapped blind clients to work on more jobs than ever before.

M. Need for Additional NIB Project-Related Services

The participating workshops indicated that they anticipated future greater demands being made upon them for service by multi-handicapped blind persons. Consequently, 77.3% requested additional and continuing assistance from NIB in the new product, rehabilitation, and engineering areas as a carryover of the Project experience.

N. The Competitively Employed Group

Despite their extensive limitations, 20 of these 291 multi-handicapped blind clients were placed in competitive industry during the course of Project activities. This competitively employed group was compared with the other 271 clients in the Project in an effort to develop a profile of the more successful group. This analysis revealed that the most apparent attributes of the competitively employed group were:

1. Their average age was 27.0 years, establishing them as being considerably younger than other Project clients.

2. Eighty percent of the placed clients were females, whereas only 41.6% of the total Project caseload consisted of women.

3. The competitively employed group had a mean educational level of 10.0 years, a level which was slightly higher than that of other Project clients.

4. Almost all of the placed clients had had prior successful employment experiences.

5. Seventy-five percent of these competitively placed clients were considered to have attained their employed status primarily because of the intervention of the Project.

In summary, it is apparent that the 291 clients reported on by this Project were a severely disabled group which suffered many vocational disadvantages. Despite their modest employment potential and their earlier unsatisfactory rehabilitation and employment experiences, a large majority of these clients benefitted from Project and local workshop services to the degree that they attained an improved level of remunerative employment. Indeed, the rate of State rehabilitation agency case closure was so favorable that the group's performance may be viewed as comparable to that of other less disabled rehabilitation caseloads. As hypothesized, the vital dynamic in achieving these results generally was considered to be the new products and related engineering and rehabilitation interventions developed by the Project and administered by the cooperating workshops for the blind. It was generally conceded that a large proportion of these clients would have remained unemployed or under-employed had it not been for the new products introduced under Project auspices.

V. THE NEW PRODUCTS

The Government New Products procedures pioneered by this Project screened literally thousands of possibilities. Many man-hours were spent in identifying, assessing, testing, and adopting new products. Owing to the specialized nature of the workers concerned and the limited equipment and capital resources of the workshops, only a small percentage of these products eventually reached the production stage. Although Government makes huge purchases each year, relatively few of the products purchased meet the criteria of workshops for the blind that serve multi-handicapped blind persons. The high degree of selectivity required in this process made the new product search comparable to looking for a needle in a haystack. However, as the expertise of the Project personnel grew, the search and assessment process became more precise and predictable. In effect, the staff became increasingly aware of what to look for in prospective new products and increasingly certain in their ability to readily determine whether the specified wanted job attributes actually resided in such products.

As a result of Project operations, 37 major product groupings consisting of 139 individual line items were added to the Schedule of Blind-Made Products. These 37 major items were produced by 26 NIB-associated workshops. Table I lists the 37 major groupings, indicating for each the estimated number of jobs created thereby for multi-handicapped and other blind persons and the estimated annual sales volume for each grouping. These statistics are in addition to ballpoint pens and refills, a work project that is traceable only in part to this demonstration. Ballpoint pens and refills alone provided employment opportunities for 65 multi-handicapped blind persons with sales running into the millions of dollars.

TABLE I

NEW PRODUCTS ADDED TO THE
SCHEDULE OF BLIND-MADE PRODUCTS
(Exclusive of Ballpoint Pens)
DURING THE PROJECT PERIOD

Product	Estimated Annual Sales Value	Estimated Number of New Jobs Created
1. Apron, Construction Worker's	$ 7,000	2
2. Tag, U. S. Suspect	11,000	1
3. Bag, Tool	20,000	3
4. Cover, Litter	30,000	4
5. Cover, Helmet, Camouflage	151,000	16
6. Suspenders, Field Packs	779,000	21
7. Pillowcase, Disposable	93,000	3
8. Cover, Mattress	500,000	68
9. Cover, Ironing Board	4,000	3
10. Towel, Dish	6,000	2
11. Neckerchief, Navy	247,000	10
12. Case, Maint. and Ops. Manuals	10,000	3
13. Signal Flags	100,000	10
14. Sling, Gun	275,000	10
15. Bag, Sleeping, Disposable	110,000	10
16. Ash Receiver	30,000	3
17. Bag, Duffel	138,000	23
18. Mop, Sponge	10,000	2
19. Traffic Safety Clothing	250,000	22
20. Cap, Operating, Surgical	10,000	5
21. Trimmer, Paper	75,000	5
22. Pillow, Bed, Urethane	21,000	2
23. Net, Laundry	38,000	5
24. Binder, Note Pad	114,000	6
25. Band, Helmet, Camouflage	25,000	3
26. Bag, Soiled Clothes, Saran	160,000	8
27. Case, Spectacle, Envelope	72,000	8
28. Bedspreads	223,000	5
29. Bag, Motion Sickness	30,000	7
30. Kit Bag, Flyers	75,000	16
31. Cap, Compressed Gas	30,000	6
32. Curtain, Shower	50,000	4
33. Pillow, Bed, Foam, Latex	96,000	6
34. Pad, Bakery	91,000	5
35. Pencil, Mechanical	66,000	5
36. Chock Assembly, Wheel	52,000	8
37. Sheet, Crib	10,000	3
Totals	$4,009,000	323

The products listed in Table I were allocated to the participating workshops in accordance with their interests, resources, and readiness to assume joint responsibilities in product development. In most instances, the production experience was a positive one for the participating workshops and productive activity on these items continued beyond the life of the Project. Thus, the effects of new product development in the government-use area and the engineering and rehabilitation supports which were concurrently provided can be said to have had a long-term effect upon the production capacity of the participating workshops and their potential for serving multi-handicapped blind clients. As indicated earlier, even though certain workshops did not participate directly in Project development activities, there often was a spillover in which the shop in question became indirectly involved in the activity and influenced or was influenced by it.

As the Project reached its termination date, product development activities were in high gear. As will be noted in Table II, a variety of other new products were under investigation or development by NIB and its cooperating workshops at that time.

TABLE II

EXAMPLES OF NEW GOVERNMENT-USE PRODUCT LINES
UNDER STUDY IN WORKSHOPS FOR THE BLIND
ASSOCIATED WITH NIB
DURING THE CLOSING STAGES OF THE PROJECT

Item	Agency Developing This Activity
PLASTIC	
Bags (Various)	NIB
Case, Flag, Interment	Delaware County Branch, Pennsylvania Association for the Blind
Curtains, Shower	Industries for the Blind, Winston-Salem
Holder, Desk, Memo	Dallas County Association for the Blind
Holder, Desk, Nameplate	Royal Maid, Inc.
Whistle, Ball	Dallas County Association for the Blind
Dispenser, Tape	Lighthouse for the Blind, Seattle
Bottles, Pill	NIB
Calendar Stands	Royal Maid, Inc.
Backing Plates for Military Insignias	Royal Maid, Inc.
Tableware	Lighthouse for the Blind, Seattle
METAL	
Casters	Wisconsin Workshop for the Blind
Soldering Irons	Lighthouse for the Blind, Seattle
Plumbing Fixtures	Lighthouse for the Blind, Seattle
Cooking Pans	Lighthouse for the Blind, Seattle
Electrical Wall Plates	Lighthouse for the Blind, Seattle
Hand Oilers	Lighthouse for the Blind, Seattle
Book Ends and Book Rests	Arizona Industries for the Blind
METAL	
Clips, Paper	Services for the Blind, Nashville
Rake, Lawn	Center for the Blind, Louisville
Dust Pan	Lighthouse for the Blind, Seattle
WOOD	
Club, Policeman	Lighthouse for the Blind, Seattle

TABLE II (Continued)

Item	Agency Developing This Activity
WOOD (Continued)	
Pin, Tent	Waco Lighthouse for the Blind
Blackboards	Cleveland Society for the Blind
Bulletin Boards	Cleveland Society for the Blind
Handles, Brush	Royal Maid, Inc.
Ax Handles	Lighthouse for the Blind, Seattle
DISPOSABLES	
Cover, Headrest (2)	Industries for the Blind, Winston-Salem
Washcloths	Charlotte Workshop for the Blind
Mask, Surgical	Services for the Blind, Denver
Caps, Surgical	Services for the Blind, Denver
Cover, Dental Tray	Services for the Blind, Denver
Pillowcases	Lighthouse Industries, New York Association for the Blind
PAPER, CARDBOARD, PRESSBOARD	
Pressboard Binders	Blind Work Association, Binghamton
Card, Guide File	NIB
Envelopes	NIB
Portfolios	NIB
Tape	NIB
Red Rope	Buffalo Association for the Blind and Lighthouse for the Blind, St. Louis
WRITING INSTRUMENTS	
Markers, Tube Type	NIB
Pencils, Mechanical	NIB
Pencils, China Marking	NIB
Pen Set, Desk	Dallas Association for the Blind
ASSEMBLY AND PACKAGING	
Flashlights	Oregon Industries for the Blind
Kit, Snake Bite	Services for the Blind, Denver
Kit, First Aid	Cincinnati Association for the Blind
Inking Pads	Services for the Blind, Denver

Table II suggests the wide range of emerging products that have been generated by cooperative NIB and workshop efforts. Undoubtedly, some of these "in process" items will enter workshop production in the period subsequent to the termination date of the Project and, thus, may be regarded as constituting potential additional credits to the Project's output. In this discussion of the dimensions of the Project's contribution to workshop job offerings for the multi-handicapped blind group, sight should not be lost of the human factor in the situation. Although Project sales and employment figures are impressive, it is well to remember that they might have been considerably higher but for the highly selective nature of the review process which confined the Project only to new products that are suitable for the modest ability levels of multi-handicapped blind persons. Thus, every product added to the Schedule of Blind-Made Products under Project auspices, as well as those under consideration as the Project terminated, all had to pass the rigorous test of suitability for this limited client group. The fact that so many of these products did pass the test supports the hypothesis that multi-handicapped blind persons do have important residual work capacities and that government-purchase items do have the potential for being converted into job tasks that are compatible with the interests and abilities of such individuals.

VI. THE WORKSHOP SERVICE EXPERIENCE

The experience of the workshops in the Project often generalized into the overall functioning of the participating agencies. Thus, the selection and production of locally-produced items, the general capacity of the workshop to accommodate severely limited persons, and the general management of the shops all were influenced positively by participation in the Project. As a consequence, it is almost impossible to assess the full impact of the Project on workshop service activities merely by presenting production figures. However, it can be noted that the cooperating workshops were allocated at least 188,000,000 units of the new government-use products developed by the Project staff. These units represented a total sales value of almost $16,000,000.

Beyond the quantitative achievements reported by the Project, the various workshop directors and managers who played vital roles in Project activities have commented on the impact of workshop participation in the Project upon the functioning of their agencies. Some of these reactions are paraphrased below:

Malcolm Bruce, Cincinnati Association for the Blind

> This agency started the inflight dining packet project with thirty multi-handicapped blind workers but, as the peak of Project activity was reached, this work force rose to more than seventy multi-handicapped blind individuals. These workers ranged in efficiency from a level comparable to that of the other blind workers in the shop to about half of that level. As a result of this experience, the Cincinnati Association believes that, as more capable blind clients are encouraged to seek competitive employment, multi-handicapped blind workers will make up an ever-increasing proportion of the workshop labor force. Mr. Bruce summarized his agency's experience as follows: "We are convinced these people are capable of being productive if given an opportunity to demonstrate their ability. To sum up, we are aware of the employment needs of multi-handicapped blind persons. . . . we believe that we fulfill this need in a manner that will give these people human dignity by helping them to become at least partially self-supporting citizens. . . . The greatest problem in our workshop . . . is suitable and adequate work to enable us to accomplish our ultimate goal of providing full-time employment for multi-handicapped blind persons."

Robert Pistel, Duluth Lighthouse for the Blind

During the three years of the Project, the Duluth Lighthouse admitted seventeen new blind workshop clients of whom thirteen had one or more disabilities in addition to blindness. In reviewing its experience with such workers in turning out nylon net laundry bags, a Project-initiated new government-use product, it became clear that new government-use products had become an important vehicle for serving severely limited blind clients. "...most of the people referred to our agency are multi-handicapped. Any increase in the number of clients served is going to almost automatically mean that we are serving a multi-handicapped individual. As we expand our production with new government products or new subcontract operations, we will be employing more multi-handicapped individuals."

Paul Hennerich, St. Louis Lighthouse for the Blind

In the course of its participation in the Project-related ballpoint pen project, the St. Louis Lighthouse for the Blind opened new employment opportunities for eighteen multi-handicapped blind persons. As far as this agency was concerned, an important factor determining the level of success achieved in this experience was the cooperation given to the effort by the State rehabilitation agency and the NIB consultant staff.

Rudy Elmer, Seattle Lighthouse for the Blind

In conjunction with its extensive experience on a number of products introduced by the NIB Project, the Seattle Lighthouse for the Blind noted that some 50% of its blind workers have additional handicaps, five of these workers are deaf-blind. Through the introduction of new government-use products, it was possible for this agency to assign some of its more capable blind workers to more challenging work tasks, a procedure which freed an increasing number of the simpler work tasks for performance by multi-handicapped blind workers. Given the opportunity to perform appropriate work tasks, the multi-handicapped blind group showed that they, too, can become proficient producers.

These local workshop reactions are representative of the experiences of those who gained on-the-line experience serving multi-handicapped blind persons through the use of new government-purchase products. Almost all of the participating workshops had a favorable response to the Project experience. By and large, the new products introduced through Project development, engineering, and rehabilitation services enabled these local agencies to increase the proportion of multi-handicapped blind persons in their workshops and, concurrently, to elevate the level of service offered

to this group. Reports emanating from the participating workshops uniformly indicated that when multi-handicapped blind persons are properly trained and employed in a workshop setting, in most cases, they are able to become at least partially self-supporting. Equally important, virtually all of these workshops discovered that if suitable work tasks are available, that their facilities can accommodate substantial numbers of blind persons with other handicaps. Instances were reported at the termination of the Project in which 50% or more of the workers in a workshop for the blind were multi-handicapped persons.

The Project studied the work forces of a sample of sixteen participating workshops prior to the initiation of Project services. At that time, these agencies were serving 498 multi-handicapped blind persons. Three years later, as the Project neared its termination, this roster of multi-handicapped blind persons had risen to 806 individuals, an increase of 308 persons or 61.1%. The multi-handicapped proportion of blind workers in these workshops rose from approximately 25% at the beginning of the Project to approximately 40% at the end of the three-year Project period.

VII. DIRECTIONS DEVELOPED IN THE PROJECT FOR WORKSHOP SERVICE TO MULTI-HANDICAPPED BLIND PERSONS

Seventeen of the participating workshops reviewed their Project experiences in consultation with NIB field staff members and, in the process, suggested some directions for improving and extending workshop services for multi-handicapped blind persons. Among these guidelines are:

A. Special Training and Supervisory Methods

Sixty-two and one-half percent of the respondent workshops regarded specially designed evaluation and training methods as essentials in service to multi-handicapped blind workshop clients. Such methods should be built around higher levels of individualization, a lower personnel-to-client ratio, and more intensive and formal training curricula.

B. Relationships with State Rehabilitation Agencies

Fifty-eight and nine-tenths percent of the respondent agencies found that workshop service to multi-handicapped blind persons requires even closer liaison with State rehabilitation agencies than is customary. Among the forms of assistance that State agencies should provide are: support in obtaining the expanded physical facilities and the especially adapted tools that are needed to employ the multi-handicapped, more frequent inter-agency staff meetings, shared intake responsibility, and continuing consultation between the two agencies during the rehabilitation process.

C. New Equipment

Seventy-five percent of the respondent workshops noted that their adoption of new government-use products suitable for multi-handicapped blind clients mandated the installation of new equipment. Quite frequently, this requires the workshop to gain access to additional funds and credit as well as a readiness to assume ongoing responsibility for maintaining new equipment.

D. Special Problems in Serving the Multi-Handicapped Blind Client

As a result of having had pre-Project experience in serving multi-handicapped blind persons, 25.0% of the respondent workshops

reported no special problems in serving such persons in the course of their participation in the Project. However, 75.0% of them did note special service problems such as: establishing a substitute or an improved means of communication with certain subgroups (for example, the hearing handicapped, those with English as a second language, and the culturally disadvantaged), arranging transportation to and from the workshop, maintaining satisfactory production schedules, and providing the additional supervision that such clients often need.

E. Procedures for Overcoming Problems

Although the problems encountered by these workshops in serving the multi-handicapped blind group were perplexing at times, all of the responding agencies indicated that they had made progress in solving such problems. Among the techniques used to do so were: additional personnel were assigned to counseling, training, and supervisory duties in the workshop; the established client evaluation process in the workshop was sharpened; staff competence was upgraded; car pools were organized; and workshop personnel were trained in special methods of communicating and working with multi-handicapped blind persons.

F. Values and Limitations of NIB Project Services

Of the respondent workshops, 86.7% indicated satisfaction with the methods used by the Project to select new government-use items; 66.7% were satisfied with the pricing procedures used by the Project; 66.7% were satisfied with Project engineering services relating to setting up new jobs; 53.3% were satisfied with the Project's performance in developing supportive workshop services for multi-handicapped blind clients; 46.7% were satisfied with Project efforts in modifying production methods for new items; and 86.7% were satisfied with the Project as a whole.

G. The Vocational Potential of Multi-Handicapped Blind Persons

Of the respondent workshops, 81.3% concluded that many multi-handicapped blind persons have adequate potential for participation in workshop programs. However, this conclusion was qualified in terms of the pervasive need of this group for special training facilities, increased on-the-job supervision, and a patient and painstaking workshop staff. Two of the workshops (12.5%) did not issue a statement on multi-handicapped blind worker potential because they felt that they had

not yet had enough experience with this client group to warrant taking a position. One additional workshop declined to respond to this item.

H. Advice to Other Workshops

As a result of their experience with multi-handicapped blind persons in this Project, the respondent workshops offered some specific advice to other workshops interested in launching additional services to this group. Their suggestions included making full use of NIB and other consultation, developing specialized work supervision procedures for these clients, establishing lower production goals per worker, and being prepared to invest more time, effort, patience, and supervision in meeting the needs of these clients.

I. Future Workshop Plans for the Multi-Handicapped Blind Client Group

All of the respondent workshops planned to maintain, and even extend, their services to multi-handicapped blind persons subsequent to the termination of the Project.

J. The Consultation Component

The participating workshops in this Project received 266 days of Project consultation during the life of the demonstration (an average of 16.6 days of consultation per respondent workshop). Since the cooperating agencies differ in their attributes, needs, and emphases, they needed consultation services in diversified areas, including engineering and production techniques, finding sources of raw materials and finished components for the assembly of new products, understanding and using government specifications, pricing, quality control procedures, production methods, cost analysis, means of packing and shipping products, analyzing plant facilities, installing and attaching machines, cutting patterns, inventory control, management techniques, devising production and service records, and evolving improved rehabilitation procedures.

In addition to their consultations with Project and other NIB personnel, the respondent workshops used supplementary means to benefit from the expertise of others, including field visits to selected plants and suppliers of equipment and materials, technical consultation with private industry, conferences with Government officials, and contacts with other sheltered workshops. In total, the respondent workshops received a total of 88 days of non-NIB consultation in connection with their Project activities

(an average of 5.5 days of such consultation per respondent workshop).

K. Supportive Services Provided

All of the respondent workshops observed that in working with multi-handicapped blind persons it is mandatory for a workshop to provide or have access to extensive supportive services. Among the supportive service areas mentioned most frequently were: counseling and casework, medical and psychiatric facilities, and, in many cases, a comprehensive inter-disciplinary team approach.

L. Competencies of Multi-Handicapped Blind Workers

The general impression of these respondent workshops was that multi-handicapped blind persons can function effectively in a workshop setting, a position that was verified by the degree of success they reported in the use of multi-handicapped blind workers to produce Project-initiated new products. Thus, they reported 100% success in using this group on the production of mattress covers, sleeping bags, ash receivers, and safety signal flags; 75-99% success in relation to inflight dining packets, camouflage helmet covers, and dish towels; 50-75% success in relation to ironing board covers, neckerchiefs, traffic safety clothing, and ballpoint pens and refills; but less than 50% success in relation to dietetic packs and field-pack suspenders. These findings suggest that new products are not equally satisfactory for this client population.

M. Increase in Proportion of Multi-Handicapped Clients

The participating workshops in this Project differed widely in the number and proportion of multi-handicapped blind persons served during the Project. Some of the respondent workshops had achieved moderately high levels of service to multi-handicapped blind persons prior to participating in the Project. For example, in 1968, two of the participating workshops estimated that 66% and 62%, respectively, of their work force were in this category. More commonly, the participating workshops started at lower levels and gradually increased their multi-handicapped caseloads as the Project progressed. Generally, the initial percentage hovered around 25-30%. As may be expected, those with large initial personnel complements (60 or more percent) of multi-handicapped blind clients at the beginning of the Project had moderate increases during Project participation.

> On the other hand, the most dramatic gains reported were among the workshops which had served relatively few clients of this type in the past. Thus, one workshop increased the proportion of blind clients with additional handicaps in its total work force from 0 to more than 50% in the three-year period; another increased from 20% to 50%; and a third increased from 35% to 55%. The most common increases ranged from 10% to 15% of the total work force.

In general, it may be concluded from these data that the Project-related experiences of these participating workshops were largely favorable. Thus, in support of their positive feelings about the workshop potential of multi-handicapped blind workers and the capacity of their programs to cope with such clients, these workshops submitted statistics concerning the number and proportion of multi-handicapped blind workers served, the range and variety of products put into production, and the increased dollar values of allocations, sales, and wages. Perhaps, the most telling evidence of all was their readiness to continue and, in most cases, step up service to multi-handicapped persons in the post-Project period.

VIII. CASE SUMMARIES

Statistical reports do not fully reflect the human aspects of this Project. Impressive as the figures are, they fail to reveal the contributions that the Project made to the lives of hundreds of blind persons with additional handicaps. The brief capsule case reports that follow will help to illustrate the meaning that this Project had for people, especially for those to whom society had offered so little in the past. For them, the prognosis for eventual social and economic independence had been guarded, at best, in the pre-Project period. As will be noted, participation in the Project precipitated a gratifying turnaround in the lives of these people and hundreds like them.

(Case of Mrs. F. H.)

Mrs. F. H. was a 30 year old congenitally blind married woman who had a sixth grade education. Her blindness was complicated by cultural deprivation and a public assistance style of life developed over many years on welfare. She had very limited communication but was able to travel independently. She had no past history of remunerative work although she occasionally assisted her totally blind husband in door-to-door selling of blind-made products. In addition to blindness, cultural deprivation, and communication limitations, Mrs. F. H. had emotional problems which rendered her unable to deal with the pressures of predetermined work schedules and production standards. Beyond this, she had a number of allergies, particularly to dust, which made it difficult for her to function in an industrial setting. Prior to entering the workshop, the only rehabilitation service which she had received had been received in the form of counseling provided by another agency.

Referred to the workshop by the State Rehabilitation Agency, she revealed very poor work motivation and vocationally inadequate self-perception. In the course of an initial evaluation, she was found to have potential for sewing machine operation and she was subsequently trained in this skill. At this time the Project-initiated ironing board item became available and, using special training procedures and adapted production methods, the workshop staff prepared her to work on this item after devising modifications for her sewing machine. Owing to the intensity of her problems, she could not adapt to workshop conditions and a special industrial homework arrangement was devised for her.

Currently, raw materials are delivered to her home and finished goods are picked up on a regular schedule.

Mrs. F. H. now is a stable and productive worker, earning about $1.60 per hour, a rate that is steadily increasing. She is becoming the first member of her family to be self-supporting and independent of welfare. She constantly calls the shop for more work, an attitude that contrasts with her initial apathetic work orientation. Her goal is to lift herself out of poverty. In her contacts with others, she is markedly more sociable and outgoing. In her personal life, she is happier and more self-confident. The availability of the ironing board item rlayed a major role in her development and subsequent success in employment.

(Case of Mr. M. G.)

Mr. M. G., 43 years of age and married, has no children. He started losing his vision due to glaucoma while in the Armed Forces. His present vision is about 20/80 with less than five degrees of visual field. With a history of limited education, apparently retarded in his intellectual functioning, and with an offense record, he offered no evidence of a past work history. Unable to read in any medium, he was a recipient of aid-to-blind and veterans benefits. In addition to blindness, Mr. M. G. had an emotional condition characterized as paranoia. In addition, he wears a hearing aid that does not fully correct an auditory loss. Beyond all this, Mr. M. G. was an alcoholic. Despite the fact that he had travel vision, his wife escorted him to and from the shop because of his emotional fears. He had been counseled extensively by staff members of the State Commission for the Blind, particularly in relation to his hearing problem and his constant suspicion that people were talking about him.

In due course, the State Commission referred Mr. M. G. to the workshop where he has been tried on a number of different work tasks. It was found that he worked best by himself. Although he was capable of operating a side-clip machine, his hourly rate and the quality of his production were low due to lack of motivation, constant excuses and self-pity, unrealistic ideas about the worker role, and his feeling that he could never do anything of consequence. As he observed other more severely handicapped workers producing successfully in the workshop, his work attitudes became more positive.

In addition to the counseling and supportive services he received at the workshop, he was referred to a local alcoholism and

psychological counseling service where he has been responsive to treatment. In time, he was placed on the Project-initiated ballpoint pen project where he developed pride in his work and a sense of responsibility for the products assigned to him. He is now a full-time workshop employee earning $1.65 per hour and hasn't missed a day in the past three months, in contrast to his earlier erratic attendance. In cooperation with the alcoholism counselor, the workshop staff is developing a recreation program for him in an effort to foster greater community participation.

With the help of the vocational opportunities provided by the ballpoint pen product, local community resources, and a sensitive workshop staff, Mr. M. G. has moved decisively toward becoming a useful and productive person in spite of his multiple problems.

(Case of Mr. S. E.)

Mr. S. E., a 29 year old married man with one child, has been visually handicapped from birth for reasons unknown. As a presumed mental retardate, he had been institutionalized at age two for a period of nineteen years. He received no formal education at the institution, however he worked in the laundry and, upon returning to the community, he gained some limited janitorial experience. However, for the most part he was unemployed after leaving the institution. Mr. S. E. had received no rehabilitation services prior to coming to the NIB-associated workshop and, at the time of intake, he was on public assistance. He was married to a moderately mentally retarded person.

Psychological testing in March, 1971, produced a verbal IQ of 71, a performance IQ of 73, and a full-scale IQ of 71. On the basis of an initial State agency assessment, the client was referred to the workshop for work-related services. After a brief period, he became a workshop employee on a trial basis. A limitation in fine motor coordination resulted in his assignment to packaging, a task which required gross manual and muscular abilities. From the beginning, Mr. S. E. showed signs of becoming a superior employee although he tended to be more interested in quantity, rather than the quality, of work he could produce. Eager to please, he was a product of environmental deprivation who attempted to overcome some of his losses by ingratiation.

Taking advantage of work opportunities generated by Project-initiated new products, the client has made substantial progress. Thus, initially he earned 35 cents an hour; he now makes $1.90.

In the past, he lived with his in-laws in a crowded house, but now, assisted by his earnings and his new self-confidence, he is trying to buy his own home. When his mother-in-law tried to remove his child, the courts ruled that Mr. S. E. and his wife are competent parents. The client was assisted in this matter by the workshop staff. At present the client is receiving a reduced public assistance grant and is quite satisfied with himself and his new role as a breadwinner and father. In conjunction with his vocational development, he has become a member of a blind bowling team and a participant in the Parent-Teacher Association of his child's head start program. While it is unlikely that he will move out of sheltered employment, he is expected to earn a satisfactory income and derive much satisfaction from his work. In reviewing this situation, it is apparent that Project-initiated new government products helped this workshop to help Mr. S. E. at many levels and to insure for him a constant and secure vocational role.

Summary of the Case Materials

The case illustrations presented above indicate some of the human outcomes of this Project. Almost without exception, these clients had been exposed to long-term deprivation, neglect, and avoidance. As serious as their blindness and complicating handicaps were, these limitations had been exacerbated and extended by their experiences in an unresponsive environment. In some instances, their deprivation had been intensified by premature and unwarranted institutionalization; in other cases by family neglect or community callousness. Essentially, these were unwanted people, shunted out of the mainstream of living by their relatives and neighbors, and by the community. In effect, their multiple problems had made social pariahs of them. Indeed, it can be generalized that the handicaps of these individuals were as much social as they were intellectual, physical, and emotional. In many respects, they had been victimized by a social system which penalizes and ostracises human deviance.

Despite their specialized interests and resources, many of the agencies for the blind participating in this Project had had limited success in the past with such individuals. A review of the limited capacities, motivation, and socialization level of these clients suggests why. Their handicaps were so all-encompassing and well-entrenched that a case could well have been for vocational unfeasibility. And, in reality, such a case often was made. Yet, in instance after instance, the participating workshops persisted in their desire and willingness to serve them. Unfortunately, this desire was not always matched by adequate resources. Thus, most of the workshops in question lacked the types of work, the level of staff sophistication, and the necessary managerial skill to handle more than a small number of multi-handicapped blind persons at any one time.

The establishment of the Project in 1968 provided the workshops with some of the wherewithal they needed to make service to this group more feasible. For the first time, most of the cooperating workshops gained access to a series of work tasks that made it economically and socially possible to train and employ seriously limited multi-handicapped blind persons. Assisted by Project-initiated new products, selected and developed expressly for the members of this population and supported by the Project's engineering and rehabilitation services, these participating workshops took important steps in the 1968-1971 period to widen their vocational programs for the multi-handicapped blind group.

As these cases indicate, multi-handicapped blind clients had the capacity for benefitting from these broader opportunities. Although a small number of failures did occur in the case of clients who had become so depleted because of long-term neglect and disadvantage that they could not function vocationally under any circumstances, the large majority of them revealed a surprising degree of potential for remunerative employment under controlled workshop conditions. In fact, the response of these clients to the workshop program often exceeded the most optimistic hopes and expectations of those who served them. In time, many went on to become self-supporting community members, shedding their welfare status and family dependence in the process.

The case analyses developed in this Project suggest that the substantial economic benefits that multi-handicapped blind clients derived from Project services constitute only a fraction of their total gains. Just as their multiple handicaps spilled over into all areas of living, so did the rehabilitation experiences that they had in the Project. Even when no deliberate organized attempt was made by a workshop to provide therapeutically-oriented psychological and social services, improvements occurred in these areas in association with the workshop experience. Such gains appeared to be generated by a growing sense of client wholeness and worthiness that accompanied the process of restoration to the role of productive and independent worker. This spillover into the psychosocial area was not limited to those who achieved full-time employment. Even those who were able to attain partial self-support only, revealed unexpected degrees of social development, including the assumption of more active family roles, wider participation in community affairs, and a broadening of leisure interests and activities.

The progress made by these clients in their rehabilitation and subsequent employment has to be attributed, in the first instance, to their own residual capabilities and strengths and to the courage and resourcefulness of the cooperating workshops in serving them so effectively. However, both of these contributing factors would have been nullified if, after rehabilitation, employment opportunities had not been available. Thus, the Project probably made its most important contribution in opening for the workshops and their multi-handicapped blind clients job possibilities that had not been previously available to members of this group. Once these possibilities had been created by the Project, the essential humanity of the clients and the enterprise and compassion of the workshops made the rest possible.

IX. CONCLUSIONS

The following conclusions were derived from the findings of this Project.

A. Multi-Handicapped Blind Persons Can Work!

In 1971, more than eight hundred blind persons with additional complicating disabilities received employment services from workshops participating in this Project. More than 50% of the work force in some of these workshops consisted of such individuals. These findings suggest that the employment potential of this group is greater than had been previously supposed. A tenable hypothesis emerging from this experience is that additional thousands of multi-handicapped blind persons with employment needs and possibilities are available for service in the community and that such persons will comprise a substantial proportion of the new applicants for workshop service coming to agencies for the blind in the years to come. Furthermore, the trend seems to be in the direction of serving more adequately that segment of the multi-handicapped blind group that has very serious social and vocational problems. It may be speculated that in the next few years some multi-handicapped blind persons who today are considered vocationally unfeasible because of the severity of their limitations will be viewed more favorably as potential workshop clients.

B. Workshops for the Blind Can Serve Multi-Handicapped Blind Clients!

Prior to the initiation of this Project, some workshops for the blind had established a commendable record in rehabilitating multi-handicapped blind persons. Thus, as the Project began, two of the participating workshops already maintained work forces in which the proportion of multi-handicapped blind persons exceeded 60%. As the Project unfolded, many NIB-associated workshops broadened their service to this group and discovered that they really had the capacity to accommodate larger numbers of such clients in their ongoing programs. At this writing, it cannot be concluded that all workshops for the blind can serve all the multi-handicapped blind persons who request assistance. But, it can be suggested that virtually any workshop in the NIB system can serve at least some and that those which already address themselves to the multi-handicapped blind group can serve larger numbers than they do. In essence, NIB workshops for the blind have been moving toward meeting the challenge of service to blind persons with additional handicaps and, insofar as this Project has been able to determine, they stand ready to assume additional responsibilities in this area. The vital consideration in this matter is that the workshops participating in this Project were able to work with these

very limited clients without having to make radical changes in their structures and processes. Although some changes were necessary, they usually were in directions in which the workshops were already moving, that is, toward greater individualization, more active product development and engineering programs, wider use of automated equipment, more sophisticated rehabilitation programming, better trained personnel, and more efficient workshop management. As the Project closed, it was clear that, with few exceptions, the workshops associated with NIB generally had the capacity and the readiness to rehabilitate and employ a sizable proportion of the blind population that has complicating disabilities.

C. The NIB Constellation of New Product, Engineering, and Rehabilitation Services Stimulated Workshop Programming for the Multi-Handicapped Blind Group

Although the trend in a few workshops for the blind toward stepped-up workshop service for the multi-handicapped blind group already was in evidence when the Project started, the production and services statistics emanating from the Project, the reports of the participating workshops, and the observations of the Project staff all confirm the hypothesis that the Project new products, engineering, and rehabilitation interventions accelerated the existing modest movement toward greater workshop involvement with the multi-handicapped blind group. Time and again in evaluating this Project, participating workshops noted that it would have been impossible for them to accommodate additional multi-handicapped blind persons without benefit of the specialized products searched out and developed by the Project, without the engineering aids it devised, and without the rehabilitation consultation it offered. Perhaps the most telling evidence of Project success was the NIB decision to continue offering all of these services to its associated workshops on an ongoing basis subsequent to the termination of the Project. In general, the demonstration services introduced by the Project proved their worth in facilitating the delivery of local workshop rehabilitation and employment services to multi-handicapped blind persons and fulfilled the expectations of the public and voluntary agency leaders who participated in designing the Project interventions. Through the Project experience, it has been demonstrated that a central coordinating organization such as NIB, can bridge the gap between government-purchase procedures and local workshops and make the resources of the former far more available to the latter for the benefit of very severely disabled. The initiatives used by NIB in this Project made a difference and this difference resulted in suitable employment for hundreds of multi-handicapped blind persons who otherwise would have remained fully or partially idle.

D. New Products that are Suitable for Multi-Handicapped Blind Workshop Clients Exist in Abundance in the Government-Purchase Sector

This Project developed more than thirty-five new major government-use

product lines that were suitable for production by multi-handicapped blind persons. Representing millions of dollars in sales and tens of thousands of man-hours of work, these new products were the major dynamic in this Project, opening many additional rehabilitation and employment opportunities for seriously limited blind persons. Beyond the immediate population served, the product search and development processes pioneered in this demonstration appear to have validity for other disability groups, as well. This conclusion is particularly important in view of the passage of the Javits-Wagner-O'Day Act in 1971 which extended provisions of the original Wagner-O'Day Act to workshops serving other disability groups. The new government-use products introduced by this Project made everything else possible and, by extrapolation, such new products could do the same for other workshops, as well. Beyond this, one may conjecture that hundreds of additional products in the government-use sector are awaiting discovery by rehabilitation agencies serving blind and other disabled persons. This Project did not exhaust the possibilities. On the contrary, it merely scratched the surface. It may be expected that continuing new product search and development activities now being undertaken by NIB (and, perhaps, by other coordinating groups) will turn up dozens, perhaps hundreds, of additional new products that will be within the reach of multi-handicapped blind and other severely disabled workshop clients and the organizations that serve them.

E. Engineering and Rehabilitation Consultation Services are Essential supports to New Products Development Procedures

However crucial they might be in promoting enhanced employment opportunities for multi-handicapped blind persons, new products will not automatically insure increased service to this group. The experience gained in this Project suggests that new products development activities undertaken by a coordinating workshop organization in cooperation with local workshop agencies will be most effective in achieving employment objectives only if concomitant aggressive and dynamic engineering and rehabilitation services are made available to the participating workshops. Such supportive services focus new products development activities more sharply on the needs and capacities of multi-handicapped blind persons. Many of the gains reported by this Project can be attributed to combined impact of the three major interventions - new products, engineering, and rehabilitation consultation. The roles played by each of these services varied from workshop to workshop and from product to product but no instance was noted in this experience in which Project purposes could have been achieved in the absence of any one of them. Therefore, it must be concluded that any future new products development effort undertaken by sheltered workshops on behalf of multi-handicapped and other clients should include engineering and rehabilitation components if they are to attain the highest possible level of effectiveness.

F. Increased Automation Offers a Promising Channel for Future Workshop Development

Traditionally, workshops for the blind have built their service programs around a core of hand production operations. Although some of these workshop facilities maintain extensive machine capabilities, these capabilities usually lag behind technological developments in industry. Often, this lag is rationalized on the basis that manual jobs (with little or no aid from machines) constitute the most suitable work operations for blind and multi-handicapped blind workshop clients. In fact, some workshops have been proud of their policy of clinging to hand operations even when the installation of appropriate machines might have been possible. Such workshops insist that this is their way of insuring jobs for their clients. The findings of this Project tend to put this position into question. Whereas many manual operations require levels of skill that are beyond the capacities of multi-handicapped blind workers, highly automated jobs tend to be simpler and more compartmentalized, bringing the level of required worker functioning down to a level that is more commensurate with the abilities of severely limited blind persons. In this Project experience, recurrent engineering and rehabilitation studies revealed that automated work often was superior to hand work for multi-handicapped blind persons and, in most cases, more economically feasible, as well, for this client group. It may be concluded that machine jobs will become increasingly important in workshops for the blind in the future and that such jobs will, in many instances, be within the competency range of multi-handicapped blind clients and provide them with more stable and remunerative employment than might otherwise be possible. Beyond this consideration, it should be noted that automated operations tend to be more interesting, more rewarding, and most esteemed by clients. The status of machine operation jobs appears to be higher in the worker's perceptions and, without question, these jobs add substantially to the worker's productivity. Finally, as noted in the ballpoint pen project, automated operations enable workshops for the blind to become more competitive in their contract-pricing procedures. In general, this Project found that automation offers a promising lead for future developments in this field. If workshops for the blind are to meet the growing challenge of the multi-handicapped blind group, they probably will have to do so through a more widespread adoption of selected well-engineered automated operations.

G. Diversification is Vital!

Although the government-purchase sector was found by this Project to be a rich source of new products for multi-handicapped blind workshop clients, it is doubtful if government purchases will or should ever become the only source of such products. The rise and fall of government needs, the special conditions that shape government-purchase activities, and the changing range of government product needs all place certain constraints on this

source of work activities. Economic dependence upon government alone may be unwise in the sense that putting all one's eggs in one basket always is risky. The NIB Project staff concluded that government is, indeed, a marvelous fountainhead of work for the multi-handicapped blind group but that it should be viewed as only one of a number of possibilities. Insofar as new products are concerned, the private sector of American industry also offers rich possibilities. It is concluded that the methods devised for working for government are equally applicable to private enterprise and that the latter may be found to be an equally productive source of work for the multi-handicapped blind client group.

X. RECOMMENDATIONS

A. The new products, engineering, and rehabilitation services pioneered by this Project should be continued by NIB in an ongoing program for the multi-handicapped blind group. This recommendation already has been implemented. Since the termination of the Project, NIB has been offering such a service to its associated workshops as part of its total agency program.

B. Workshops for the blind should expand their facilities for serving multi-handicapped blind clients. This recommendation is being implemented to some extent in that observations made during the post-Project period confirm the fact that more multi-handicapped blind persons are participating in workshop programs than during any previous period in history. Moreover, more workshops today than ever before have plans for accommodating larger groups of such clients in the months and years ahead.

C. The procedures that worked so well in this Project should be applied to the private industry sector. This recommendation is being implemented through the medium of a grant application submitted to the Social and Rehabilitation Service. At this writing, the Proposed Project is still under consideration but initial reactions to it have been favorable.

D. Further research and demonstration is needed. Although this Project broke new ground, it should be considered only a beginning in the new product area. Additional projects of this type in the public and voluntary purchase areas should be undertaken to widen even further the product capability of workshops for the blind and to extend the resources available at such shops for serving multi-handicapped blind persons.

E. Although this Project concerned itself exclusively with workshops for the blind, there is some reason to believe that it has relevance for other workshops, as well. Therefore, in the light of the provisions of the new Javits-Wagner-O'Day Act, it is recommended that similar new product activities should be undertaken by general workshops for other disability groups.

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APPENDIX A

THE PROJECT ADVISORY COMMITTEE

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APPENDIX B

PARTICIPATING WORKSHOPS

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Ira N. McAlister, Executive Director

California Industries for the Blind, Inc.
1255 Park Avenue
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Barney Eisenberg, Manager (formerly in Berkeley, California)

California Industries for the Blind, Inc.
840 Santee Street
Los Angeles, California
James C. Gibson, President

Services for the Blind
100 West Seventh Avenue
Denver, Colorado
Kenneth Self, Workshop Manager

*Delaware Bureau for the Visually Handicapped
305 West Eighth Street
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Georgia Factory for the Blind
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Harold L. Emlet, Superintendent

The Chicago Lighthouse for the Blind
1850 West Roosevelt Road
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William O. McGill, Executive Director

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Center for the Blind
P. O. Box 6206
Louisville, Kentucky
Charles E. Cox, General Manager

Kansas Foundation for the Blind, Inc.
223 West Third Street
Wichita, Kansas
Mrs. Perrye Bryson, Executive Director

Kansas Industries for the Blind
425 MacVicar Street
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Ben J. Albright, General Manager

*The Lighthouse for the Blind
123 State Street
New Orleans, Louisiana
Frank W. Sherman, General Manager

*Maryland Workshop for the Blind
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Baltimore, Maryland
George H. Park, Executive Vice President

*Duluth Lighthouse for the Blind
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Miss Elva Hayes, Executive Director

*Blind Work Association, Inc.
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The Industrial Home for the Blind
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New York Association for the Blind
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Martin P. Strahs, General Manager

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Conway Harris, General Manager

*Industries of the Blind
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Woodrow W. Hudson, General Manager

Richmond Industries for the Blind, Inc.
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APPENDIX C

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Joseph A. Fischetti, Rehabilitation Services Advisor

Colonel John W. Hanger, Vice President - Government Marketing

Jim MacFarland, Chief, Government Products Development Department

Tom Connor, Manager of Budgets

Al Wiese, Director of Research and Development

John Granger, General Manager (Royal Maid, Inc.)

Frances Goldberger, Secretary of the Project

Dr. Herbert Rusalem, Consultant

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Tom Connor, Manager of Budgets

Al Wiese, Director of Research and Development

John Granger, General Manager (Royal Maid, Inc.)

Frances Goldberger, Secretary of the Project

Dr. Herbert Rusalem, Consultant

APPENDIX D

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